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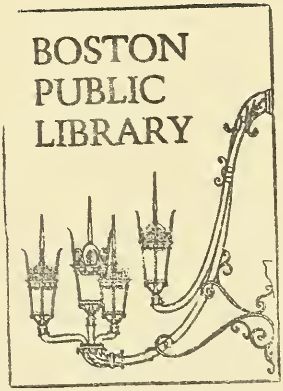

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SUPPLEMENTAL FINAL ENVIRONMENTAL IMPACT REPORT

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April 30, 1990

EOEA 7113

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SUPPLEMENTAL FINAL ENVIRONMENTAL IMPACT REPORT

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Oehrlein & Associates

Archaeology Consultant:
Public Archaeology Laboratory, Inc.

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CHAPTER I. SUMMARY

The proposed Commonwealth Center Project, located on portions of a two block site in Boston's Midtown Cultural District, consists of three buildings of varying height, form, fenestration and materials. (see Figure 1). The first site, known as Parcel 30, comprises approximately two-thirds of the block bounded by Tremont, Boylston, Avery and Washington Streets. The second site, known as the Keith Block, is located directly to the north of Parcel 30 and is an irregular corner site bounded by Washington, Avery and Mason Streets. (see Figure 2).

The Proposed Project, as revised prior to the submission of the FPIR/FEIR, contains a total of approximately 1.84 million gross square feet of new development. The largest building, to be located on the Parcel 30 block near the corner of Boylston and Washington Streets, will be 32 stories tall and contain approximately 830,000 gross square feet of office space. The office portion of the building will be located above a retail arcade containing approximately 91,000 gross square feet of retail and restaurant space. Located adjacent to the office building on the Parcel 30 block is a 13-story hotel of approximately 419 rooms. The hotel incorporated the replacement building for the Evans House into its overall hotel program. Included in the Parcel 30 program is 8,000 square feet of child care space. A below-grade garage provides parking for 1000 vehicles serving hotel guests, office workers, shoppers and night-time theater goers. (see Figure 3).

A third building, located on the Keith Block at the corner of Avery and Washington Streets, will be 32 stories tall and contain approximately 580,000 gross square feet of office space and 8,400 gross square feet of retail space. Adjacent to this building is the Paramount Theater which will be converted into a 499-seat dance theater and a 199-seat studio theater.

The existing site consists of vacant land and a mix of deteriorated retail, office and residential buildings. A significant amount of built space is currently vacant and underutilized.

PROPONENT

Commonwealth Center Limited Partnership, a joint venture of F.D. Rich Company of Boston, Inc. and A.W. Perry, Inc.

DOCUMENT STATUS

This document represents a MEPA Supplemental Final Environmental Impact Report (SFEIR). The EOEA document number is 7113.

ORGANIZATION OF THE SFEIR

The SFEIR for the Commonwealth Center Project is presented here as a document which addresses the Comments of the Secretary of Environmental Affairs of the Commonwealth of Massachusetts on the previously submitted FPIR/FEIR, as well as Comments from other public agencies and interested parties. The document includes a Revised Draft Section 61 Findings which incorporates the summary of responses to these comments. This document should be reviewed in concert with the DPIR/DEIR and FPIR/FEIR documents previously submitted.

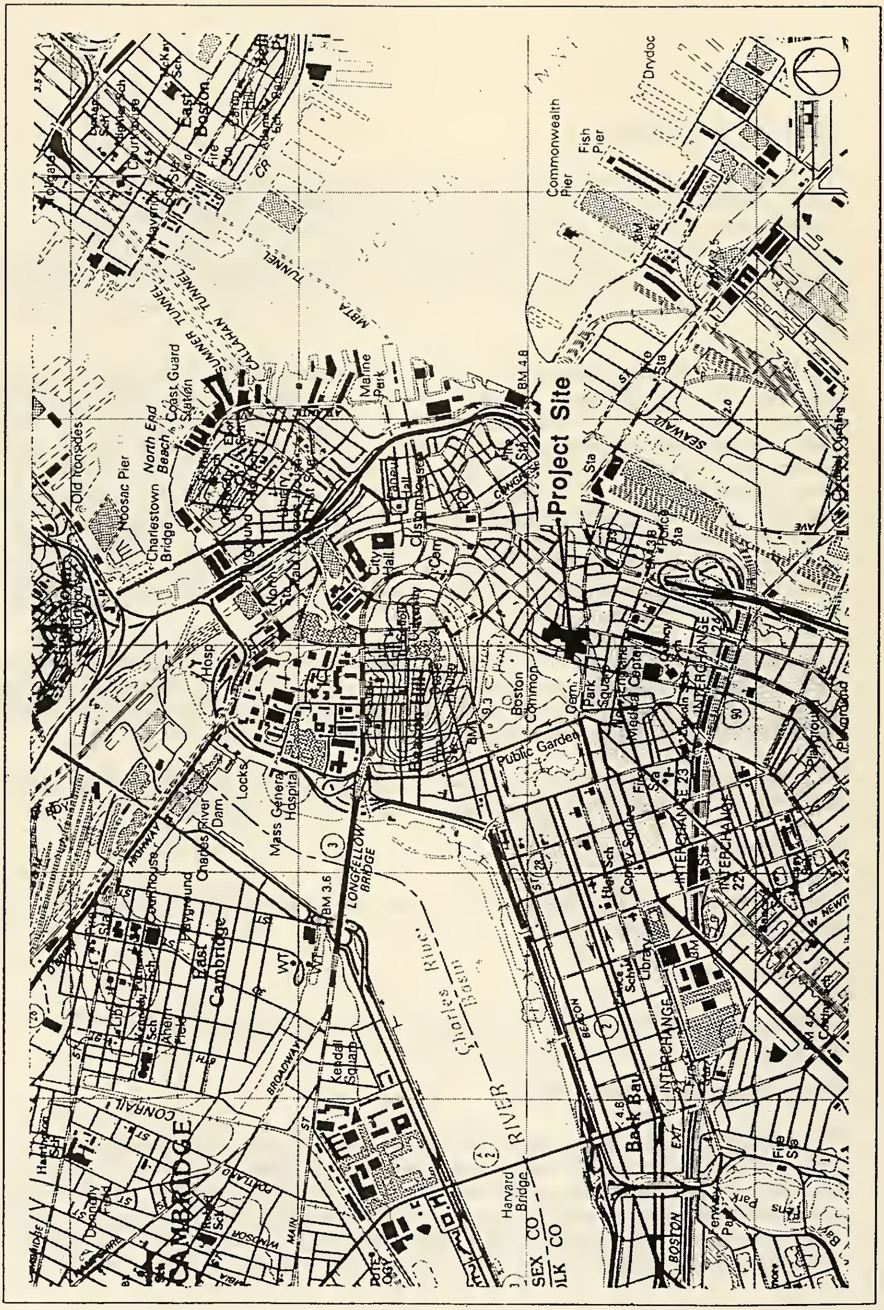


Figure 1. Locus Map

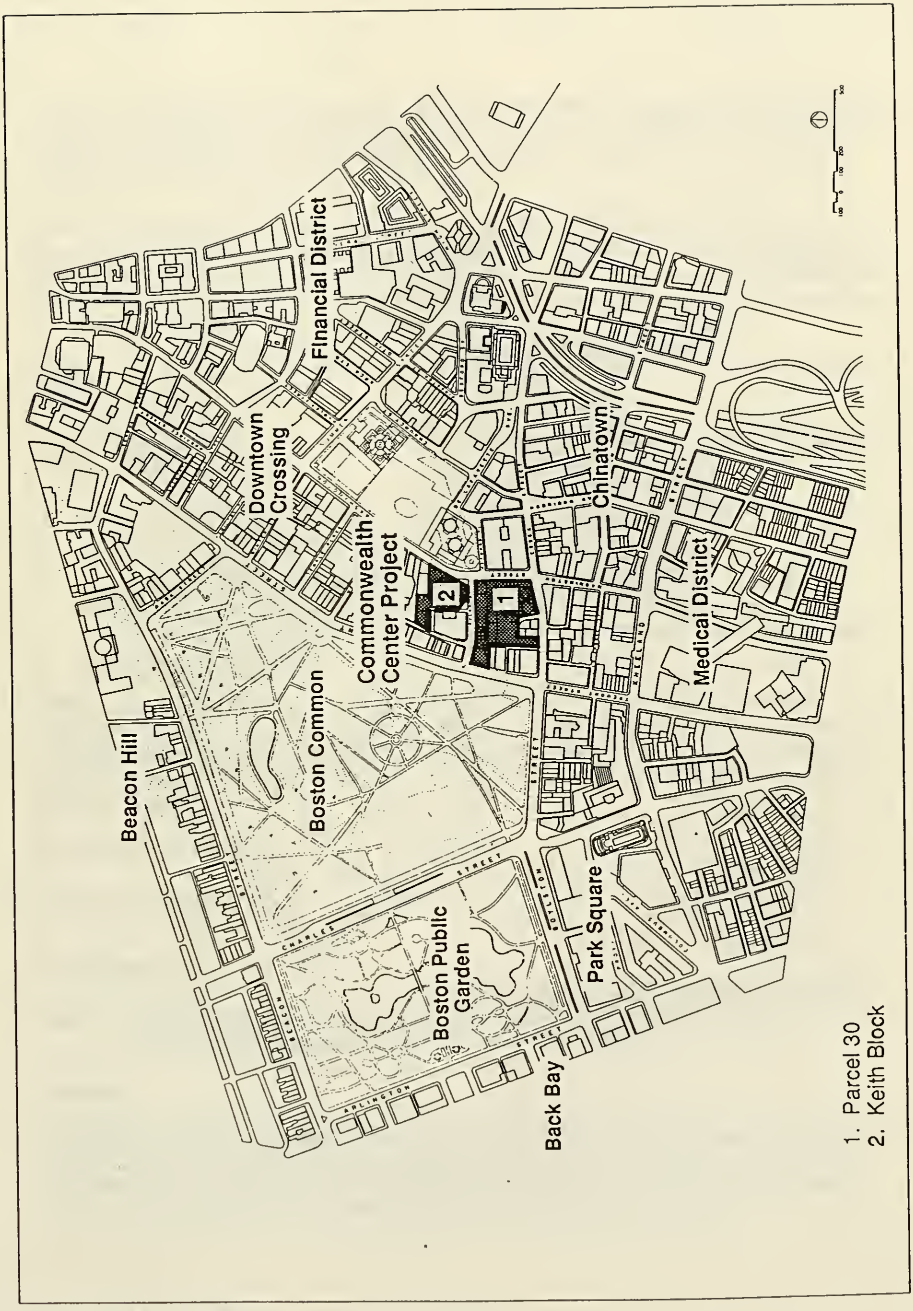


Figure 2. Project Area Map

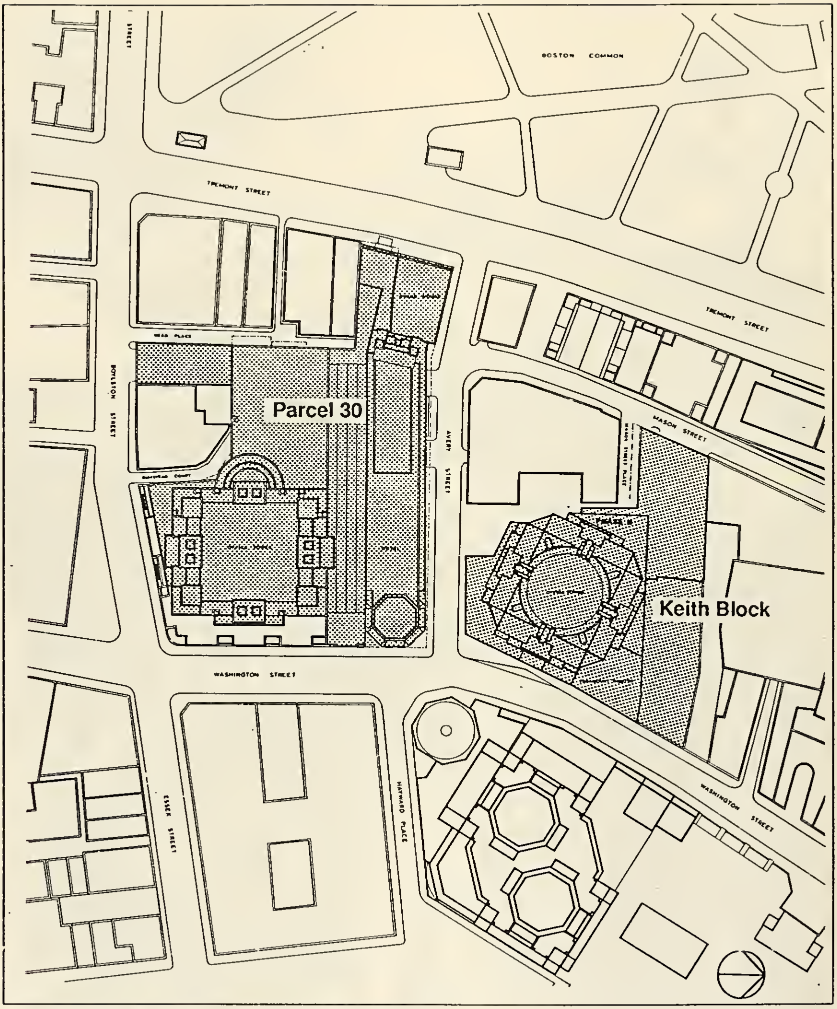


Figure 3. Proposed Commonwealth Center Project

In order to respond to the comments on the FPIR/FEIR additional analyses were conducted and reviewed with the respective commenting agency. Through this review process of acceptable responses to each comment was agreed upon. The SFEIR presents these responses and is organized into three chapters as follows:

Chapter I. This chapter summarizes the issues of the commenting agencies and interested parties and the responses of the Project Proponent. The issues and responses are organized into four of the Draft Section 61 Findings Categories - Transportation, Geotechnical, Infrastructure and Shadow. A complete/revised Draft Section 61 Findings which incorporates these responses is included in the Appendix B, Chapter III.

Chapter II. This chapter addresses each comment on the FPIR/FEIR on a point by point basis as follows:

- *A copy of the original letter.* Principal comments are highlighted with sequential numbers in the left-hand column.
- *A summary of the principal comments found in each letter.* This is provided as a convenient reference to, rather than a substitute for, the original comment.
- *A response to each summarized comment.* Each response is numerically keyed to corresponding letters and comments. In reading the response, it may be helpful to reference the accompanying original letter in order to understand the full range of issues being addressed.

Chapter III. This chapter is the Appendix and includes the Transportation Access Plan Agreement, the Draft Section 61 Findings, a list of all meetings with City and State agencies and their dates including the topic of discussion and the list of attendees, a distribution list and technical materials which supplement the discussion of the environmental issues raised in the various Comment Letters.

SUMMARY OF ISSUES

TRANSPORTATION

Traffic Mitigation

Issue: ***Consensus on the apportionment of mitigation measures among the developers of Commonwealth Center, Boston Crossing and One Lincoln Street***

Response:

According to the Boston Transportation Department (BTD), the results of analyses performed by the Boston Crossing Project represent the worst case scenario. Therefore, the BTD has required that the proponents of Commonwealth Center, Boston Crossing and One Lincoln Street provide mitigation for the Boston Crossing worst case traffic scenario.

The BTD has assigned specific costs to those mitigation measures based upon a detailed assessment of each project's proposed square footage and trip generation estimates.

A total of $661,400 in roadway improvements has been estimated by the BTD of which $260,096 (39%) is agreed to be the responsibility of the Commonwealth Center Proponent (see the Transportation Access Plan Agreement in Appendix A). The Boston Crossing proponent is responsible for $282,682 (43%) and One Lincoln Street proponent is responsible for $118,622 (18%) of the total cost of traffic mitigations. For a more detailed cost breakdown, refer to Tables 1 and 2 in Chapter II.

Traffic Analysis

Issue: ***Impact of an unchanged Essex Street and the redistribution of trips from the north and the west to the site***

Response:

The results of additional traffic analyses indicate that the directionality of Essex Street, whether it remains one-way or reconstructed as a two-way street, does not impact upon the study area's intersections using varying distribution assumptions.

The intersections principally affected by Essex Street's directionality have been shown to operate at acceptable Levels of Service "D" or better with assigning as few as none, or as many as 26 percent of all inbound trips to a westbound Essex Street.

The results of those analyses display that although average vehicle delays during either peak hour may be marginally improved or exacerbated; in no case is the peak hour Level of Service significantly decreased as a result of the redistribution of trips from the west to the site.

Pedestrian Analysis

Issue: ***Measures to minimize pedestrian impact upon the Tremont/Boylston Streets intersection while maintaining an acceptable vehicular Level of Service***

Response:

In order to maintain vehicular and pedestrian operations at an acceptable Level of Service, in the year 1996, it is recommended that the existing crosswalk be widened to 28 feet at the intersection of Tremont Street/Boylston Street. This widening will result in a vehicular Level of Service "D" or better and "impeded" or better pedestrian conditions.

The traffic analyses indicate that adjusting the signal timing at this intersection in order to provide for improved pedestrian conditions results in Level of Service "F" for vehicles during peak hours.

A field reconnaissance was conducted to determine the impact of this crosswalk widening upon the street furniture in the vicinity of this intersection. The findings indicate that the increase in the width of the crosswalks will not have a significant impact.

Crosswalks vary in width in the vicinity of the Tremont Street/Boylston Street intersection. A 28 feet wide crosswalk is considered middle-range compared to a width of 13 feet at Tremont Street/Avery Street and 51.5 feet at the Tremont/Park Street intersection. For more detail see Letter 1, Comment #2.

Public Transportation

Issue: *Mitigation measures to expand the MBTA system's capacity*

Response:

The Commonwealth Center Proponent has committed to a series of specific mitigations to provide for increased transit capacity on the MBTA Orange, Green and proposed Transitway subway lines as follows:

1. **MBTA Orange Line**

    - Construction of a new widened stairway and entrance enclosure for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project (see Figure 6).
    - Provision for a new handicapped elevator for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project (see Figure 6).
    - Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate Orange Line ventilation requirements.
    - Provision of on-going maintenance of the new MBTA Southbound Orange Line Chinatown Station entrance.

2. **MBTA Green Line**

    - Provision of space within the Project for a proposed future pedestrian connection beneath Tremont Street to the existing MBTA Green Line Boylston Street Station (see Figure 6).

3. **MBTA Proposed Transitway Line**

    - Provision of space between the two phases of the Project to allow for the proposed alignment of the MBTA Transitway line beneath Avery Street (see Figure 7).
    - Provision for coordinated construction of Project's northern underground garage slurry wall to serve as a potential southern side to the MBTA Transitway Line along

Avery Street.

- Provision for coordinated construction of the Project's eastern underground garage slurry wall to serve as a potential western side to the MBTA pedestrian connection between the Orange Line Chinatown Station and the proposed Transitway Line Hayward Place Station.

- Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate the proposed Transitway Line ventilation requirements.

Issue: ***MBTA Chinatown Station improvements and maintenance***

Response:

As part of the "*Adopt A Station*" program, the Commonwealth Center Proponent has agreed to commit to the full cost of relocating the stair and entrance to the MBTA Chinatown Outbound Station as well as building a new entrance enclosure integrated into the overall building.

In the event that this location is selected by the MBTA for a handicapped elevator, the Project Proponent will also provide for the cost of the elevator shaft and the entrance as well as the cost of maintaining this entrance.

The Project Proponent will work with the Construction Directorate Office of the MBTA in order to coordinate the design and construction of this new handicapped accessible station entrance.

Issue: ***Future pedestrian connection to/from the Boylston Station***

Response:

In order to provide for a future pedestrian connection to/from the Boylston Station, the Project Proponent has relocated the Child Care Center from the area along Tremont Street to Boylston Street. This allows for a future pedestrian connection in the location shown in Figure 6. The Project Proponent will coordinate with the appropriate agencies to obtain the necessary information prior to commencement of the construction documents. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

Issue: Future connection to the new proposed Transitway Station

Response:

Upon selection of the preferred alignment by BTD for the new Transitway Line and the resultant egress requirements and stairway width to support egress from a future Transitway Station, the Project Proponent will accommodate the additional stairway width required into its design and construction. This requires the availability of such information prior to commencement of the construction documents. The Project Proponent will coordinate with the appropriate agencies to obtain the necessary information prior to commencement of the construction documents. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

To provide for passenger transfers to a future Transitway Station at Hayward Place, the Project Proponent will coordinate its slurry wall location. This will ensure adequate width and provide for joint construction opportunities if the requisite information is available prior to commencement of construction documents. The Project Proponent will coordinate with the appropriate agencies to obtain the necessary information prior to commencement of the construction documents. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

The Project Proponent reiterates its commitment to accommodate local Orange Line and Transitway emergency ventilation requirements. This accommodation includes subsurface and surface elements within the project, in the area of Avery Place. The Project Proponent will coordinate with the appropriate agencies to obtain the necessary information prior to commencement of the construction. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

Parking

Issue: The use of those parking spaces designated for Phase II until the completion of that phase

Response:

To accommodate the proposed MBTA Transitway Line along Avery Street, the Project Proponent has agreed to eliminate its original plan for a two phase garage connected below Avery Street and instead build a single underground garage on Parcel 30 in the first phase, for both Phase I and Phase II.

The optimal development solution is to build the garage in two phases. Building the garage in one phase is an extremely costly upfront economic burden for the Project Proponent, which can be partially offset by opening and operating the garage upon the completion of Phase I.

The Project Proponent and the BTD have reached an agreement as part of the Transportation Access Plan Agreement (see Appendix A) which allows the Project Proponent to fully utilize the garage at the completion of Phase I but minimizes the number of office parking spaces available until Phase II is completed. At the completion of Phase I, the 140 Phase II office parking spaces will be temporarily added to the proposed 341 pool of public commercial spaces. At the completion of the Phase II office building the 140 spaces will revert back from public commercial spaces to office spaces for Phase II (see details in Letter 2, Comment #4 and Appendix A).

Taxi Drop-Off

Issue: The practicality of taxi-queueing at the corner of Washington and Avery Streets

Response:

As detailed in the Transportation Access Plan Agreement (see Appendix A), the Project Proponent will provide a doorman/valet at the hotel entrance, whose responsibility will be to prevent taxis or other vehicles queueing onto Avery Street departing or waiting at the hotel. The Project Proponent will also provide an illuminated signal at the corner of Washington and Avery Streets and controlled by the hotel doorman/valet for the purpose of calling taxi service from the taxi stand on Washington Street to the hotel entrance.

Loading Docks

Issue: Adequacy of the number of loading docks for this project

Response:

An investigation of recently approved and operating projects demonstrates that the Project Proponent's proposed number of loading docks of one per 167,000 square feet is well within the range of practical acceptability and sufficiency in Downtown Boston (see Table 15).

GEOTECHNICAL

Issue: Groundwater Discharge

Response:

The Project Proponent has identified two feasible methods for disposing of the underslab groundwater. Based upon observed seepage conditions at Rowes Wharf (5 levels deep), 75 State Street (6 levels) and 125 Summer Street (5 levels) and on-site subsurface conditions a flow rate of five to ten gallons per minute is anticipated.

As required by the Boston Water and Sewer Commission permanent discharge of groundwater is to be collected in the underslab drainage system. The Project Proponent will explore two options for disposal of groundwater as alternates to discharge into City storm drains. The options currently under consideration are: 1) utilizing the pumped water within the project for non-potable use including the cooling system or toilet flushing or, 2) discharging to recharge wells located at the perimeter of the site. (see Letter 7, Comment #1).

Currently the preferred option is to use the water as a resource within the building, as it probably more cost effective and technically feasible than the recharge option and also reduce the Project need for water. Therefore, a system for using the water in the cooling system will be evaluated during design of the project. If necessary, the recharge option will also be evaluated.

INFRASTRUCTURE

Issue: Measures to minimize water usage and wastewater flow

Response:

The Project Proponent is committed to use measures to minimize water usage and wastewater flow such as:

- Landscape design promoting minimal turf areas and minimal plantings, and use of water efficient plantings.
- Use of water saving techniques and equipment for kitchen, cafeteria and laundry area.
- An investigation on the use of alternative heat rejection sources such as air cooled condensers, closed circuit towers and evaporative condensers in lieu of open water towers. Water usage will be compared both within the building and at the power plant which supplies the energy for an air cooled system. The Project Proponent is also investigating utilization of groundwater for the cooling system.

Issue: Connection to the existing combined sewer system

Response:

Currently there are no known problems with the 12" combined sewer in Avery Street during wet weather flows. While the Proposed Project will cause an increase in the flow to this line under the preliminary routing of the sanitary and storm lines the moderate increase is not anticipated to exacerbate the situation.

Several buildings on Parcel 30 currently contribute flow to the 12" combined sewer in Avery Street. This flow will be eliminated as the Proposed Project requires demolition of these structures. New flows from the Parcel 30 portion of the Proposed Project will be conveyed in separate storm and sanitary lines to an existing combined sewer in Boylston Street. Increased sanitary flows from the Keith Block portion of the site are the only proposed additions to the 12" combined sewer in Avery Street. The storm runoff from this area is already tributary to this 12" line. All flows from the Proposed Project are to be conveyed away from the area by the 28" x 42" combined sewer in Washington Street which has been shown to have adequate capacity in the FPIR/FEIR.

The tentative connection points were selected based upon discussions with the BWSC. The proposed sanitary and storm sewer lines have been sized based upon conservative estimated fixture counts. As the project moves forward into more detailed design the actual line sizes and flows can be more accurately estimated. This process will most likely see a down sizing of all lines. Also the site plan review process with the BWSC will further clarify whether the proposed connection points remain feasible. Several options do exist to those outlined in the FPIR/FEIR including:

1. Connect to existing 12" combined sewer as proposed with separated lines.
2. Replace existing combined sewer with larger size line to handle increased flow and install lines from project as proposed.
3. Install separate sanitary sewer line to serve the north portion of Proposed Project (Keith Block) and connect to 28" x 42" combined sanitary sewer in Washington Street. Connect storm sewer to 12" line in Avery Street.
4. Relocate the proposed connection points to coincide with frontage along Washington Street and connect separate storm and sanitary lines to 28" x 42" combined sewer in Washington Street.

SHADOW

Issue: Impact upon the Tremont-on-the-Common

Response:

The Commonwealth Center Project does not cast any new shadows on the TOC and its swimming pool during summer time. Due to its location on top of the parking garage (5th story), the pool is shaded by the TOC building itself (27 stories) or the Opera House.

The Project Proponent believes that the Commonwealth Center project will generally increase the value of the TOC units as it will be a substantial improvement to the existing neighborhood. Furthermore, the pedestrian experience and new activity with a hotel, shops, restaurants, office tenants and cultural facilities will make the entire neighborhood a more enjoyable and secure place to live.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

AEL S. DUKAKIS
GOVERNOR

IN DEVILLARS
SECRETARY

March 5, 1990

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	:Commonwealth Center
PROJECT LOCATION	:Boston
EOEA NUMBER	:7113
PROJECT PROPONENT	:Commonwealth Center Ltd. Partnership
DATE NOTICED IN MONITOR	:January 26, 1990

The Secretary of Environmental Affairs herein issues a statement that the Final Environmental Impact Report submitted on the above project does not adequately and properly comply with the Massachusetts Environmental Policy Act (G.L.,c.30,s61-62H) and with its implementing regulations (301 CMR 11.00).

Commonwealth Center, a proposed mixed use development in Boston's Midtown Cultural District, includes three buildings to be located on portions of a two block area generally bounded by Boylston, Washington, Tremont, and Mason Streets. The project consists of two adjacent parcels: Parcel 30, which comprises approximately two thirds of the area between Tremont, Boylston, Avery and Washington Streets; and the so called Keith Block, immediately to the north, between Avery, Washington and Mason Streets.

Since the DEIR, the project has been revised to reflect an overall decrease in size from 1.94 million square feet (sf) to 1.84 million sf. In addition to the reduction in size, changes in the allocation of space for office, hotel, retail and day care uses are depicted in the FEIR. Generally, the changes reflect an increase in hotel area (from 291,120 sf to 321,347 sf), a decrease in retail (from 162,150 sf to 99,445 sf) and office space (from 1,476,580 sf to 1,410,319 sf), and a decrease in onsite day care space (from 12,000 to 8,000 sf). No changes have been proposed in the size of the two theatres (698 seats total) or the parking garage (1,000 spaces), and the net loss in onsite day care space (4,000 sf) will be provided elsewhere as required by the Boston Redevelopment Authority (BRA).

100% RECYCLED PAPER

Determination of Inadequacy

The objective of the Environmental Impact Report (EIR) review process under MEPA is to equip state agencies that must make permitting decisions for the project with sufficient information to make a Section 61 Finding that "all feasible measures have been taken to avoid or minimize the impact to the environment" (301 CMR 11.10(3)). Thus, an approval of a Final EIR must be based on a clear assessment of the project's impacts and an equally clear demonstration that the mitigation program and the proponent's commitment thereto will effectively minimize project related impacts. Otherwise, there is no recourse but to require a supplemental review.

These are bases for this determination of inadequacy of the Commonwealth Center Final EIR. As is discussed further below and in comments from others, the environmental review of this project to date has identified unacceptable impacts for which mitigation either has not yet been determined or for which the proponent has not appropriately assumed responsibility. In addition, more analysis may be required based on the proponent's response to the need for further mitigation commitments. More analysis is clearly required for the issue relating to long term disposal of stromwater runoff and groundwater, which is introduced in the FEIR in a summary fashion without the benefit of data or analysis.

All issues which have been raised in this Certificate and in the comments from others must be carefully and comprehensively addressed in a Supplemental FEIR in order that a decision can be made that the environmental review process has satisfied the objectives as described under MGL Chapter, Section 61.

Traffic

According to Table 21 in the FEIR, the project will generate a total of 21,948 average weekday trips, of which 12,767 (58%) will be transit trips, 3,457 (16%) will be pedestrian trips, and 5,724 (26%) will be by autos.

Review of the Draft Section 61 Findings (i.e. Project Summary) in the FEIR, indicates that the specific traffic mitigation for which this project proponent has assumed responsibility to implement fall far below the level of mitigation commitment necessary for a project with impacts of such scope. They include:

Vehicular

Remove existing curbside parking on the southern edge of Boylston Street approach to Boylston Street/Tremont Street intersection for 150 feet and pay for signal retiming to provide for exclusive right turns.

Pedestrian

1. Widen sidewalks on Avery Street by 6 inches
2. Widen western edge of Washington Street by 3 feet
3. Widen crosswalks at Washington/Boylston Streets, Tremont/Boyston Street, and Avery/Tremont Street intersections.

Transit

Employ flexible and staggered working hours.

Other traffic mitigation has been deferred to some point in the future when this and other proponents, in conjunction with appropriate public agencies, determine how to allot equitably the mitigation which is necessary based on the overall impact on the area.

Such an approach is not acceptable, given that none of the EIR reviews of the individual projects (i.e. One Lincoln Center, Boston Crossing, Commonwealth Center) has shown to date that differences in the analyses of the transportation impacts under Build conditions have been reconciled. Presumably, the apportionment of mitigation will be based on a consensus of the assessment of impact attributed to each project. In addition, the Boston Transportation Department and others have indicated that the pedestrian impacts of this project are unacceptable, even with the proposed mitigation, and that additional traffic analysis is needed in order to improve pedestrian level of service at the intersection of Tremont and Boylston Streets to at least "impeded" status. The ramifications of adjusted signal timings at this intersection on vehicular traffic are unknown, and it is unclear what value the proposed widening of sidewalks by six inches will have. Furthermore, it is unacceptable for this proponent, who will rely on mass transit to accommodate 58% of the greater than 21,000 anticipated daily trips, to assume that planned improvements by the MBTA will mitigate the transit impacts of this project to the point that staggering and/or flex hours for employees of the Commonwealth Center tenants will suffice.

There are a number of very large development projects now being proposed for the City of Boston, both downtown and elsewhere. These projects will add thousands of automobiles to Boston streets and thousands of commuters to the public transportation systems. Traffic in the metropolitan area is growing at a rate of almost 4 percent a year, yet in recent years, public funds available for transportation improvements required by new development have been sufficient to cover only 25 percent of the estimated cost of those improvements. Estimates are that nearly 40 percent of the area's new labor force will be supplied by people who live outside of the metropolitan area and will need to commute to work.

In this time of increasingly scarce public funds for transportation and other improvements, we must do everything possible to ensure that the developers, who are placing additional strain on an already stained infrastructure, and will profit from this growth, invest to a greater and greater degree in the systems necessary to support this growth. Otherwise, we will choke on our own progress. Boston, which is already congested and suffers unacceptable levels of carbon monoxide pollution, cannot bear more traffic without significant improvements. The public transportation system, on which private developers rely so heavily as an appropriate way to reduce automobile traffic, will only be able to accommodate these increases if the developers commit to finance a substantial portion of the necessary improvements themselves.

Essex Street Widening

4. The SFEIR must reflect a revision to the traffic analysis which addresses the concerns raised by the Boston Traffic and Environment Departments (BTD and BED) regarding the assumed use of Essex Street. Include trip distribution patterns which respond to the BTD concern and evaluate a different scenario which considers Essex Street as is.

Public Transportation

5. The SFEIR must investigate opportunities for specific mitigation that will expand the system's capacity in order to accommodate increases in ridership from the Commonwealth Center project. The improvements should be based on an analysis of the project's impact on MBTA operations.

Groundwater Discharge

The issue of long term groundwater control for the project through the use of groundwater recharge wells has been raised in the FEIR for the first time, with no substantive information presented to allow the reader to determine the feasibility/ ramifications of such a system. The SFEIR must explore this issue in more detail in response to comments from the MA Water Resources Authority and the Boston Water and Sewer Commission. Should this option be deemed infeasible, the SFEIR must evaluate alternative disposal options, as appropriate.

Draft Section 61 Findings

Based on the additional analyses which are required in the SFEIR and on expanded mitigation commitments which are anticipated, the SFEIR must include a revised list of draft findings pursuant to GL 30, s61.

March 5, 1990
DATE

John DeVillars, Secretary

Comments received :

EOTC 2/28/90
MBTA 2/26/90
BWSC 2/23/90
Tremont on the Common 2/21/90
MWRA 2/26/90
Boston Environment Dept. 2/26/90
Boston Transportation Dept. 2/26/90

JD/JW/jiw

CHAPTER II - RESPONSES TO COMMENT LETTERS ON THE FPIR/FEIR

LETTER 1 - THE COMMONWEALTH OF MASSACHUSETTS, CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE FEIR

Comment #1

Topic: *Transportation Mitigation*

Comment: *The Proponent must demonstrate that the differences in the analyses of the transportation impacts under build conditions have been reconciled between One Lincoln Street, Boston Crossing and the Commonwealth Center projects and a consensus is reached on the apportionment of mitigation attributed to each project.*

Response:

The variations in methodologies employed in determining intersection operations in the Midtown Cultural District among the three Proponents of Commonwealth Center, Boston Crossing, and One Lincoln Street have been addressed in the FPIR/FEIR for this project, to the satisfaction of the BTD. The analyses results which present a worst case scenario, that of Boston Crossing's Proponent, have been assumed by the BTD to represent those conditions requiring mitigation by the three Proponents jointly (see Figure 4 for the location of intersections considered). The BTD has assigned specific costs to those mitigations, and via detailed assessments of each project's proposed square footage and trip generation estimates has ascribed a cost estimate to each Proponent's responsibility for the total $661,400 in roadway mitigations. (see Tables 1 and 2). The Commonwealth Center's portion of that amount, ascribed by BTD to be 39 percent of the total, or $260,096 is the amount agreed to by the Proponent in the Transportation Access Plan Agreement between the City and the Proponent (see Appendix A).

The entire list of mitigations agreed upon within the Midtown Cultural District, and as originally proposed in "A Plan for Transportation in the Midtown Cultural District" (BTD, June 1989) includes those listed in Table 1, with associated cost estimates. It should be noted that the final scope of the mitigation provement at any one location in the Midtown Cultural District will be a determined by the BTD and other agencies of the City of Boston.

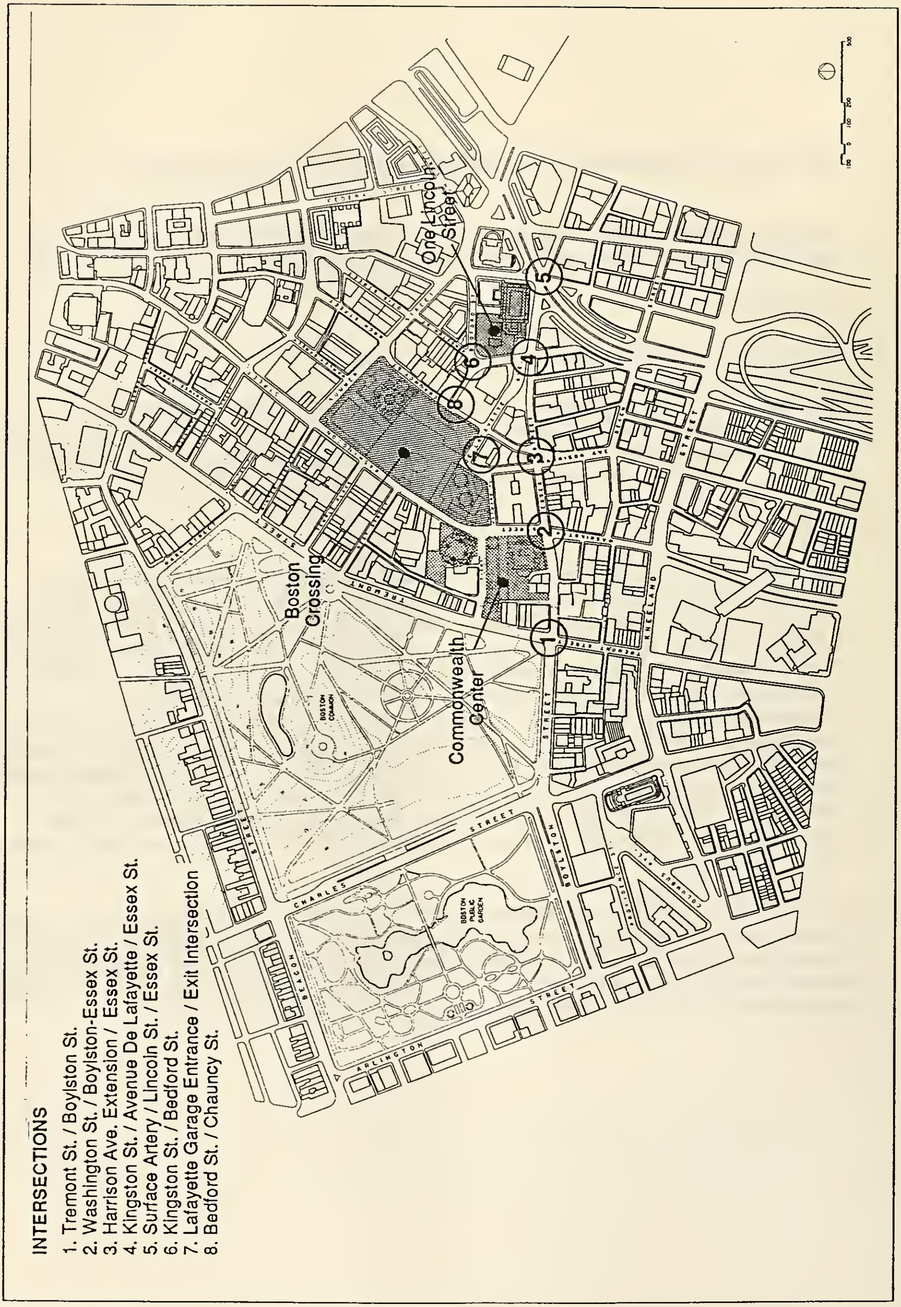

INTERSECTIONS
1. Tremont St. / Boylston St.
2. Washington St. / Boylston-Essex St.
3. Harrison Ave. Extension / Essex St.
4. Kingston St. / Avenue De Lafayette / Essex St.
5. Surface Artery / Lincoln St. / Essex St.
6. Kingston St. / Bedford St.
7. Lafayette Garage Entrance / Exit Intersection
8. Bedford St. / Chauncy St.
One Lincoln Street
Boston Crossing
Commonwealth Center
1
2
3
4
5
6
7
8
BOSTON COMMON
BOSTON PUBLIC GARDEN
TREMONT STREET
BOYLSTON STREET
CHARLES STREET
BEACON STREET
ARLINGTON STREET
KNEELAND STREET
COLUMBUS AVE
HARRISON AVE
FEDERAL STREET

Figure 4. Intersection In Need of Mitigation - Key Map

Table 1: Preliminary List of Proposed Traffic Mitigations Within Cultural District, with Associated Costs.

Location	Mitigation(s)	Est. Cost
Boylston St./Essex St. Corridor (Arlington St. to Surface Artery)	• Placement of No Stopping signs • Removal or Replacement of Meters	$7,980 $7,500
Tremont St./Boylston St. Intersection	• Elimination of signal's pedestrian phases • Improve Lane Markings	$500 $1,000
Washington St./Boylston St./ Essex Street Intersection	• Improve Lane Markings	$1,000
Harrison Ave. Extention Essex St. Intersection	• Signalization • Improve Lane Markings	$130,000 $1,000
Kingston Street/Avenue DeLafayette/Essex St. Intersection	Signalization • Improve Lane Markings	$80,000 $1,000
Surface Artery/Lincoln St./ Essex St. Intersection	• Improve Lane Markings	$1,000
Kingston St./Bedford St. Intersection	• Signalization	$20,000
Lafayette Garage Entrance/ Exit Intersection	• Signalization of two garage entrances	$105,000
Bedford St./Chauncy St. Intersection	• Improve Lane Markings	$500
Boylston St./Essex St. Corridor	• TRP Enforcement (1 Year)	$300,000
Closure of Chinatown Gate		$4,000
Reversal of Avery St. and Hayward Place		$1,000
TOTAL		$661,400

Table 2 reflects the total square feet of each of the three pending developments, the total volume of PM Peak Hour trips generated by each, and the resulting apportionment of mitigation costs attributed to each Proponent, as determined by the BTD.

Table 2: Midtown Cultural District Pending Project Mitigation Cost Apportionment

Project	Square Footage	% of Total	PM Peak Trips	% of Total	Mitigation Costs	% of Total
Boston Crossing	2,154,500	41.61	1041	43.87	$282,682	42.74
Commonwealth Center	1,944,580	37.56	975	41.09	$260,096	39.33
One Lincoln St.	1,078,500	20.83	357	15.04	$118,622	17.94
TOTAL	**5,177,580**	**100.00**	**2373**	**100.00**	**$661,400**	**100.00**

Comment #2

Topic: Pedestrian Level of Service

Comment: Additional traffic analyses are needed in order to improve pedestrian Level of Service at the intersection of Tremont and Boylston Streets to at least "impeded" status.

Response:

Pedestrian operations at the Tremont Street/Boylston Street intersection can be improved to acceptable levels of "impeded" or better via implementation of widened crosswalks on all approaches to the intersection. This mitigation can be accomplished without significant impact upon existing street furniture at the intersection.

The pedestrian Levels of Service at the Tremont Street/Boylston Street intersection within the FPIR/FEIR reflect "*Constrained*" operations, as described by Pushkarev and Zupan (Urban Space for Pedestrians, 1975). "*Constrained*" operations are characterized by average crosswalk flows in excess of six persons per minute of walk time per foot of available crosswalk width. In order to determine the signal timings and phasings which would provide for pedestrian flows within "*impeded*" operations of six or fewer persons, the intersection has been reanalyzed at Year 1996 Build volumes, with proposed mitigations providing for an exclusive right turn lane on Boylston Street eastbound. Table 3 displays the results of pedestrian Levels of Service analyses during the AM, Mid-Day and PM Peak Hours, with the requisite 46 seconds of all-pedestrian phase in the AM and Mid-Day Peak Hours, and the 38 seconds of all-pedestrian phase in the PM Peak Hour necessary to allow for average crosswalk flows of six or fewer persons within the existing ten feet of available crosswalk width on each approach at this intersection.

Table 3. Tremont Street/Boylston Street Pedestrian Service Levels, Build Conditions (1996) With Re-Timed All-Pedestrian Phasing and Existing Crosswalk Widths

Peak Hour	Crosswalk	Total Volume	Average Crosswalk Flow (Peds/Min/Foot)	Required Depth of Reservoir Space (ft)	Service Level
AM	North	1380	6.00	15.00	Impeded
	South	780	2.18	5.5	Impeded
	East	657	2.86	7.2	Impeded
	West	1039	4.51	11.3	Impeded
Mid-Day	North	1380	6.00	15.0	Impeded
	South	1508	4.21	10.5	Impeded
	East	1139	4.95	12.4	Impeded
	West	1008	4.38	10.9	Impeded
PM	North	1143	6.02	15.1	Impeded
	South	1013	3.20	8.0	Impeded
	East	591	3.11	7.8	Impeded
	West	1082	5.69	14.2	Impeded

Table 4 further displays the resulting intersection operations, for vehicular movement, which result during the AM and PM Peak Hours, considering the above-noted assumptions relative to all-pedestrian phase timing necessary to provide for pedestrian flows of no more than 4 persons per minute of existing available crosswalk width.

As displayed in Table 4, Peak Hour intersection operations for vehicular movement are projected to be at Level "F" during both the morning and afternoon, following signal re-timing which would provide for pedestrian flows in the impeded rather than the constrained range.

Table 4. Peak Hour Capacity Analyses, Tremont Street/Boylston Street, as Mitigated, With Pedestrian Flows at Impeded Level Within Existing Crosswalk Widths

Peak Hour	Average Vehicle Delay in Seconds	Level of Service
AM	126.7	F
PM	128.6	F

In order to achieve a balance of impeded pedestrian flows of six persons or fewer per minute per foot of available crosswalk width and acceptable vehicular Levels of Service of "D" or better, crosswalk widths of 28 feet would be necessary on each approach to this intersection. Additional crosswalk width, in conjunction with all-pedestrian phase timing of 18 seconds during the AM and Mid-Day Peak Hours, and 15 seconds in the PM Peak Hour, would result in peak hour levels of service of "D", as reflected in Table 5. The Levels of Service of "D" during both peak hours, assuming 28 feet wide crosswalks, would result in further improved pedestrian operations within the impeded or better range, as displayed in Table 6.

Table 5. Peak Hour Capacity Analyses, Tremont Street/Boylston Street, as Mitigated, Assuming 28 Feet Wide Pedestrian Crosswalks

Peak Hour	Average Vehicle Delay in Seconds	Level of Service
AM	39.8	D
PM	39.9	D

Table 6. Tremont Street/Boylston Street Pedestrian Service Levels, Build Conditions (1996), With 28 Feet Wide Crosswalks

Peak Hour	Crosswalk	Total Volume	Average Crosswalk Flow (Peds/Min/Foot)	Required Depth of Reservoir Space (ft)	Service Level
AM	North	1380	5.48	13.7	Impeded
	South	780	3.10	7.8	Unimpeded
	East	657	2.61	6.5	Impeded
	West	1039	4.12	10.3	Impeded
Mid-Day	North	1380	5.48	13.7	Impeded
	South	1508	5.98	15.0	Impeded
	East	1139	4.52	11.3	Impeded
	West	1008	4.00	10.0	Impeded
PM	North	1143	5.44	13.6	Impeded
	South	1013	4.82	12.1	Unimpeded
	East	591	2.81	7.0	Impeded
	West	1082	5.15	12.9	Impeded

Measurements of other existing crosswalks of Tremont Street in the vicinity of the Boston Common have also been taken in the field to determine their average widths. The existing crosswalk on Tremont Street at the Park Street Station of the Green Line measures 51.5 feet in width while Tremont Street crosswalks at Temple Place, West Street, and Avery Street measure 16 feet, 15 feet, and 13 feet in width, respectively. The crosswalks at the Tremont Street/ Boylston Street intersection may be the most narrow on the Tremont Street corridor in the vicinity of the Boston Common.

Considering the existing and projected pedestrian volumes associated with the Boylston Station of the Green Line and the larger Midtown Cultural District, their widening to dimensions more applicable to the pedestrian volume load is recommended. The findings from a field reconnaissance point to insignificant impact upon existing street furniture in the vicinity of the Tremont Street/Boylston Street intersection with the implementation of 28 feet wide crosswalks. Full details of this field reconnaissance are detailed bellow and keyed to the accompanying Figure 5.

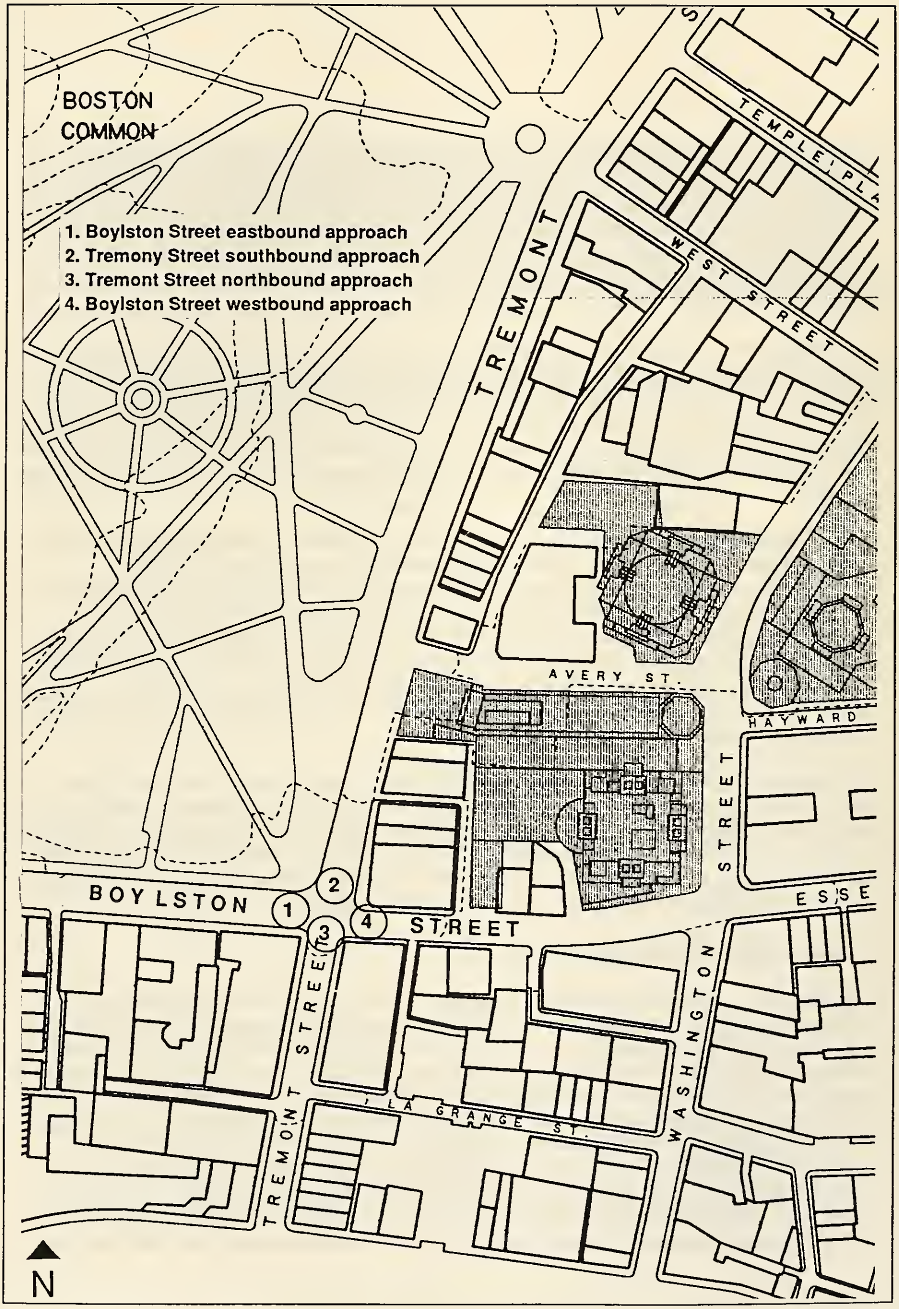
Existing STOP-lines on Boylston Street eastbound and on Tremont Street southbound are an average distance of 22 feet from the intersecting street's pavement edge. The existing crosswalks, averaging 10 to 11 feet in width, are located within those 22 feet wide sections. No formal crosswalks are provided on the Boylston Street westbound and Tremont Street northbound approaches to this intersection, but all pedestrian operational analyses related to this project have assumed crosswalks resembling the two existing crosswalks in surface width. The specific issues at each of the four crosswalks are as follows:

1. Boylston Street Eastbound Approach

The southern sidewalk edge of the Boylston Street eastbound approach to the intersection contains a sign restricting on-street parking at a point 30 feet from the Tremont Street pavement edge. The northern sidewalk edge of this approach contains no street furniture of any kind. Thus, if the Boylston Street eastbound STOP-line were to be relocated to a point 30 feet west of the Tremont Street pavement edge, a 28 feet wide crosswalk could be implemented without significant impact upon existing street furniture on this approach.

2. Tremont Street Southbound Approach

Presently, the western sidewalk edge of the Tremont Street southbound approach to the intersection has no street furniture. On the eastern edge, an existing signal standard is located 17.5 feet north of the Boylston Street pavement edge. In addition, an existing light pole and signal controller box are located 38 and 41 feet, respectively, from the Boylston Street pavement edge on the eastern sidewalk edge of Tremont Street southbound. Thus, with the exception of the existing signal standard on the eastern edge, which presently is located within the sidewalk limits of the existing crosswalk, there are no elements of street furniture which would be impacted by implementation of a 28 feet wide crosswalk on the Tremont Street southbound intersection approach. It should be noted that an existing handicapped ramp is located on the radial curve where the Boylston Street eastbound and Tremont Street southbound approaches meet. The ramp is presently located outside of the two existing crosswalks on these approaches.


BOSTON COMMON
1. Boylston Street eastbound approach
2. Tremony Street southbound approach
3. Tremont Street northbound approach
4. Boylston Street westbound approach
TREMONT
TEMPLE PL
WEST STREET
AVERY ST.
HAYWARD
STREET
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TREMONT STREET
WASHINGTON
LA GRANGE ST.
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Figure 5. Tremont Street / Boylston Street Intersection Street Furniture - Key Map

3. Tremont Street Northbound Approach

The western sidewalk edge of the Tremont Street northbound approach to the intersection contains a signal standard 14.5 feet south of the Boylston Street pavement edge. A light pole located 29 feet south of the Boylston Street pavement edge, also serves as a mounting pole for a parking restriction sign. Other street furniture within 30 feet of the Boylston Street pavement edge on the western edge of Tremont Street include four newspaper vending boxes which are chained to the existing signal standard and light pole. On the eastern sidewalk edge of Tremont Street northbound a light pole is located 29 feet south of the Boylston Street pavement edge. There is also an existing handicapped ramp located 11 feet from the Boylston Street edge. With the exception of the existing signal standard and four newspaper vending boxes on the western edge of Tremont Street northbound, no other street furniture is expected to be impacted by the proposed implementation of a 28 feet wide crosswalk on this approach. Implementation of a crosswalk of this width would also serve to incorporate the existing handicapped ramp into this crosswalk.

4. Boylston Street Westbound Approach

On the southern sidewalk edge of the Boylston Street westbound approach to the intersection, the only existing street furniture is a signal standard located 14 feet to the east of the Tremont Street pavement edge. On the north edge of this approach there is no street furniture which would potentially be impacted by the implementation of a 28 feet wide crosswalk on this approach, with the possible exception of an existing storm drain grate located on the radial curve at which the Tremont Street and Boylston Street pavements meet.

Comment #3

Topic: *Mass Transit Impacts*

Comment: *The Proponent must not assume that planned improvements by the MBTA will fully mitigate the transit impacts of this project.*

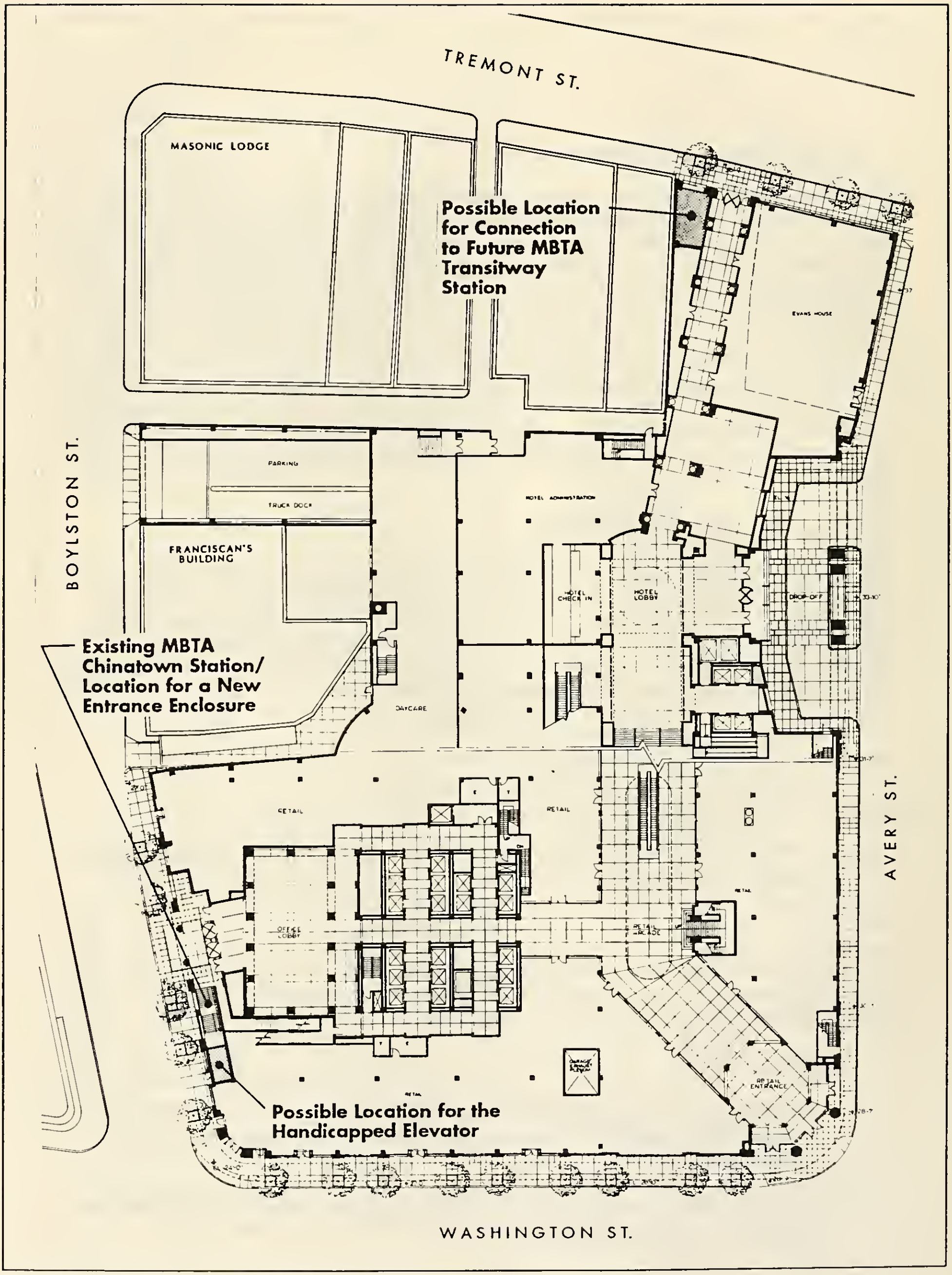
Response:

The Commonwealth Center Proponent has committed to a series of specific mitigations to provide for increased transit capacity on the MBTA Orange, Green and proposed Transitway subway lines as follows:

1. **MBTA Orange Line**

   - Construction of a new widened stairway and entrance enclosure for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project (see Figure 6).

   - Provision for a new handicapped elevator for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project (see Figure 6).



Possible Location for Connection to Future MBTA Transitway Station

Existing MBTA Chinatown Station/ Location for a New Entrance Enclosure

Possible Location for the Handicapped Elevator

Figure 6. Location of Existing and Planned MBTA Stations

- Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate Orange Line ventilation requirements.

- Provision of on-going maintenance of the new MBTA Southbound Orange Line Chinatown Station entrance.

2. **MBTA Green Line**

   - Provision of space within the Project for a proposed future pedestrian connection beneath Tremont Street to the existing MBTA Green Line Boylston Street Station (see Figure 6).

3. **MBTA Proposed Transitway Line**

   - Provision of space between the two phases of the Project to allow for the proposed alignment of the MBTA Transitway line beneath Avery Street (see Figure 7).

   - Provision for coordinated construction of Project's northern underground garage slurry wall to serve as a potential southern side to the MBTA Transitway Line along Avery Street.

   - Provision for coordinated construction of the Project's eastern underground garage slurry wall to serve as a potential western side to the MBTA pedestrian connection between the Orange Line Chinatown Station and the proposed Transitway Line Hayward Place Station.

   - Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate the proposed Transitway Line ventilation requirements.

Comment #4

Topic: *Transportation*

Comment: *Include trip distribution patterns which respond to the BTD concern and evaluate a different scenario which considers Essex Street as is.*

Response:

Intersection peak hour operations in the Study Area can operate at acceptable Levels of Service, as mitigated, with or without a two-way Essex Street, and following a redistribution of vehicle trips from the West to a westbound Essex Street.

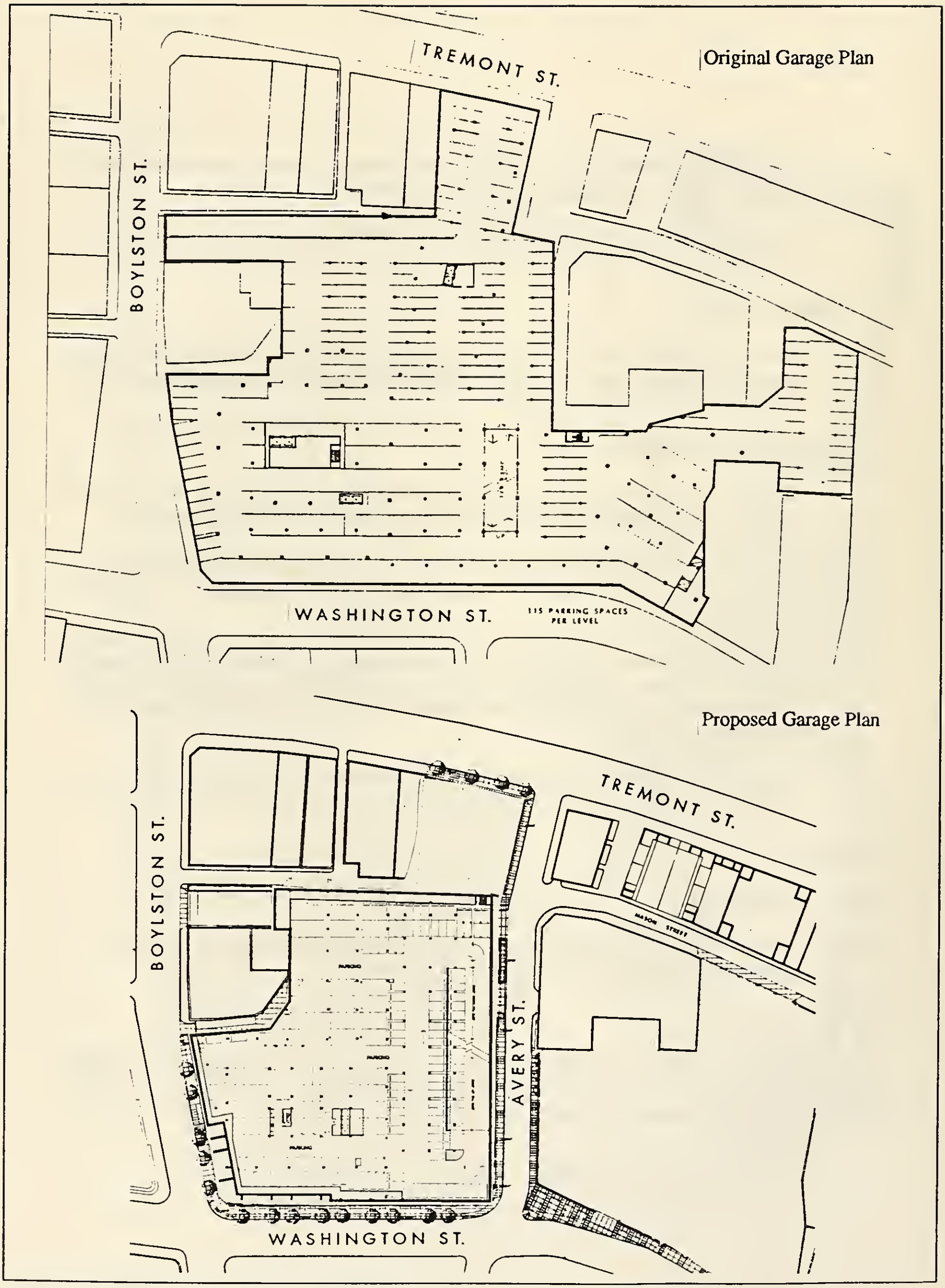


Figure 7. Original and New Proposed Garage Plan

The DPIR/DEIR's vehicle trip distribution, with regard to inbound trips to the site, assumed and analyzed a trip assignment which did not rely on a two-way Essex Street for access. Intersections within the project's study area which would be most impacted by a bi-directional Essex Street in conjunction with site access trips were analyzed in the DPIR/DEIR both within existing conditions of a one-way Essex Street and within a scenario of a bi-directional Essex Street. The results presented in the DPIR/DEIR reflected peak hour Levels of Service at these intersections of "C" or better at build volumes, with or without the incorporation of westbound Essex Street vehicular circulation.

The FPIR/FEIR's analyses reflected a redistribution of trips from the south which directed 33 percent of these inbound trips to a two-way Essex Street. Because of access opportunities to the site via Boylston Street from the west, and via Tremont Street from the north (in conjunction with the results of timed-travel runs via these routes), no alteration to the assumed distribution and assignment of inbound trips to these routes was undertaken in the FPIR/FEIR analyses. It should be noted that all outbound trips to both the north and the south were assumed in both the DPIR/DEIR and the FPIR/FEIR to use Essex Street eastbound from the site to the Central Artery and/or Surface Artery.

To determine the potential impact of additional inbound site access trips to a two-way Essex Street in this SFEIR document, 50 percent of inbound vehicular trips from the west during both the AM and PM Peak Hour have been assigned to Essex Street westbound to Avenue DeLafayette, Hayward Place, and Avery Street westbound, to Tremont Street southbound to the site. These represent those trips from the west, which, despite timed travel runs suggesting shorter travel times via Boylston Street eastbound, remain on the Mass Turnpike to the South Station and Kneeland Street exit to the Surface Artery/Essex Street intersection. The remaining 50 percent of access trips from the west remain assigned to Boylston Street eastbound to the site from the Copley Square Exit of the Mass Turnpike, from the Arlington Street off-ramp of Storrow Drive, or from other routes west of the site. The redistribution from the west, in conjunction with the previous redistribution of trips from the south conducted within the DPIR/DEIR, effectively results in a total of approximately 26 percent of all inbound vehicular access trips using Essex Street westbound from the Massachusetts Turnpike and/or the Surface Artery.

In order to determine the potential impact of this redistribution, those intersections which may principally be affected by either an increase or a decrease in vehicular volumes have been reanalyzed. These intersections include:

- Boylston Street/Charles Street (which would be expected to have a reduction in peak hour site - related trips),
- Boylston Street/Tremont Street (which would be expected to have an alteration in the directional approaches of site-related trips but not a reduction in volume),
- Tremont Street/Avery Street (which would be expected to have an increase in site-related peak hour trips),
- Washington Street/Hayward Place/Avery Street (which would be expected to incur an increase in volume due to site-related trips), and
- Essex Street/Surface Artery/Lincoln Street (which would be expected to incur an increase in site-related volume).

Table 7 displays the results of capacity analyses at these intersections during both the AM and PM Peak Hours, assuming the above redistribution. Table 8 shows the results of analyses assuming the distribution reflected in the FPIR/FEIR.

Table 7. Capacity Analyses/Build Conditions (1996), Proposed Project, Assuming Redistribution of 50% of Trips from West to Essex Street

Signalized Intersection Location	AM Peak Hour Avg. Veh. Delay (sec.)	AM Peak Hour LOS	PM Peak Hour Avg. veh. Delay (sec.)	PM Peak Hour LOS
Boylston Street/ Charles Street/	14.03	B	16.49	C
Boylston Street/ Tremont Street (as mitigated)	29.92	D	33.22	D
Tremont Street/ Avery Street	9.31	B	15.59	C
Washington Street/ Hayward Place/ Avery Street	9.95	B	21.30	C
Essex Street/ Surface Artery/ Lincoln Street (as mitigated)	24.95	C/D	38.79	D/E

Table 8. Capacity Analyses/Build Conditions (1996), Proposed Project, Assuming No Redistribution of Trips from West to Essex Street

Signalized Intersection Location	AM Peak Hour Avg. Veh. Delay (sec.)	AM Peak Hour LOS	PM Peak Hour Avg. veh. Delay (sec.)	PM Peak Hour LOS
Boylston Street/ Charles Street/	13.52	B	16.22	C
Boylston Street/ Tremont Street (as mitigated)	34.37	D	31.85	D
Tremont Street/ Avery Street	10.24	B	17.31	C

Washington Street/ Hayward Place Avery Street	11.61	B	23.07	C
Essex Street/ Surface Artery/ Lincoln Street (as mitigated)	26.21	D	40.62	D/E

The results of these analyses display that although average vehicle delays during either peak hour may be marginally improved or exacerbated, in no case does a significant decrease in peak hour Level of Service occur as a result of the redistribution.

In summary, whether Essex Street remains one-directional, or is reconstructed to provide for two-directional vehicle movement, study area intersections principally affected by Essex Street's directionality have been shown to operate at acceptable Levels of Service of "D" or better within varying distribution assumptions which assign as few as none, or as many as 26 percent of all inbound trips to a westbound Essex Street.

Comment #5

Topic: *Public Transportation*

Comment: *The SFEIR must investigate opportunities for specific mitigation that will expand the system's capacity in order to accommodate increases in ridership from the Commonwealth Center project.*

Response:

The Commonwealth Center Proponent has committed to a series of specific mitigations to provide for increased transit capacity on the MBTA Orange, Green and proposed Transitway subway lines as follows:

1. **MBTA Orange Line**

    - Construction of a new widened stairway and entrance enclosure for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project (see Figure 6).
    - Provision for a new handicapped elevator for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project (see Figure 6).
    - Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate Orange Line ventilation requirements.
    - Provision of on-going maintenance of the new MBTA Southbound Orange Line

Chinatown Station entrance.

2. **MBTA Green Line**

   - Provision of space within the Project for a proposed future pedestrian connection beneath Tremont Street to the existing MBTA Green Line Boylston Street Station (see Figure 6).

3. **MBTA Proposed Transitway Line**

   - Provision of space between the two phases of the Project to allow for the proposed alignment of the MBTA Transitway line beneath Avery Street (see Figure 7).
   - Provision for coordinated construction of Project's northern underground garage slurry wall to serve as a potential southern side to the MBTA Transitway Line along Avery Street.
   - Provision for coordinated construction of the Project's eastern underground garage slurry wall to serve as a potential western side to the MBTA pedestrian connection between the Orange Line Chinatown Station and the proposed Transitway Line Hayward Place Station.
   - Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate the proposed Transitway Line ventilation requirements.

Comment #6

Topic: *Groundwater Recharge Wells*

Comment: *The SFEIR must explore this issue in more detail. Should this option be deemed infeasible, the SFEIR must evaluate alternative disposal options, as appropriate.*

Response:

Hydrostatic Design

After further study the Project Proponent has identified two feasible methods for disposing of underslab groundwater. This analysis is detailed below.

The below-grade parking levels for the proposed development will be approximately 45 ft. below the design groundwater level; therefore the design of the below grade structure will consider the effects of hydrostatic pressures.

Two options for hydrostatic design are 1) to design floor slabs to resist the full hydrostatic pressure, or 2) to design a fully or partially relieved floor slab with a permanent underdrainage system.

For the *first option*, there must be sufficient dead weight of the structure to resist uplift pressures. In order to provide sufficient resistance in the low rise portion of the building, a system of hold down anchors drilled and grouted into the glacial till or rock, would be required. A relatively thick reinforced concrete floor slab would be required at the lowest level to span between anchor points.

Based upon configuration of the building and the depth of the basement levels, it is concluded that the more feasible system is to provide permanent hydrostatic relief (second option) below the lowest level floor slab which would consist of the following components:

1. Permanent Seepage Cutoff - A concrete diaphragm wall will be extended into the relatively impervious glacial till soils to limit the quantity of seepage.

2. Underslab Drainage System - The underdrainage system will consist of a crushed stone drainage blanket and perforated or porous wall pipe. Pipes will collect the seepage and discharge it to collection sump pits beneath the lowest level floor.

Based on observed seepage conditions at Rowes Wharf (5 levels deep), 75 State Street (6 levels) and 125 Summer Street (5 levels), and on-site seepage conditions, a flow rate of 5 to 10 gallons per minute is anticipated.

Groundwater Discharge

The Boston Water and Sewer Commission requires evaluation of alternatives to discharge of groundwater into City storm drains on a permanent basis. Accordingly, three options that are being considered, listed in order of most to least preferred, are as follows:

1. *Utilize the pumped water within the project for non-potable water uses.*

   Based on discussions with the mechanical consultant, Cosentini Associates, it is possible to use collected groundwater as a source of chilled water for the air conditioning system. Groundwater would be pumped to the cooling tower and stored for use. This would have the advantage of mitigating MWRA concerns for the use of the water cooled system. Other uses which are feasible include using the collected water for toilet flushing. The water would need to be filtered and stored on-site in a tank.

2. *Discharge water into the ground by pumping to recharge wells located at the perimeter of the site.*

   Collected groundwater would be pumped to the top of the well near the ground surface and percolate into pervious strata below the surficial fill stratum.

   In order to determine the feasibility and provide design details for the recharge option, full scale permeability testing conducted in test well installations would be required. If feasible, the recharge system would probably consist of a large number of small injection wells installed at the perimeter of the site or installed horizontally through the concrete diaphragm wall into the pervious substrata.

Since the groundwater would be returning to the natural soil strata from which it originated, little long term impact is anticipated. The recharge system would help to maintain normal groundwater levels in the adjacent areas.

The success of the recharge system depends greatly on the ability of the concrete diaphragm wall to provide an effective seepage cutoff. If flow rates are higher than anticipated after basement construction is completed, it would be feasible to install an impermeable grout curtain below the bottom of the concrete diaphragm wall to cut off a greater quantity of flow and reduce the number of recharge wells required to adequately discharge the collected water.

3. *Design the substructure to resist full hydrostatic pressures and eliminate the need for pumping, (i.e., no pump option).*

   As a last resort, if for some reason the first two options were not feasible, the project would request that groundwater be discharged into the storm drain system. Although designing the substructure to resist hydrostatic pressure is technically feasible, it is considered cost prohibitive due to the large low-rise area which would require hold-down support.

Currently, the preferred option is to use the water as a resource within the building, as it is probably more cost effective and technically feasible than the recharge option. Therefore a system for using the water in the cooling system will be evaluated during design of the project. If necessary, the recharge option will also be evaluated.

E.O.T.C. #: 90-0042

THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE OFFICE OF TRANSPORTATION AND CONSTRUCTION

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( )	PROJECT CHANGE :#	( )	OTHER :#

DATE: 01-25-90   DATE RECEIVED: 01-25-90   COMMENTS DUE:

TOWN/CITY: BOSTON, MASSACHUSETTS

PROJECT PROPONENT:

COMMONWEALTH CENTER LIMITED PARTNERSHIP
171 MILK STREET
SUITE # 401
BOSTON, MASSACHUSETTS 02109

PROJECT DESCRIPTION: COMMONWEALTH CENTER, WASHINGTON STREET/MIDTOWN CULTURAL DISTRICT, BOSTON, MASSACHUSETTS. The proposed is the construction of approximately 2.0 million G.S.F. mixed use development on portions of two (2) city blocks. The primary site is known as Parcel # 30 and is comprised of two thirds of the block bounded by Tremont Street, Boylston, Avery and Washington Streets. The second site, the Keith Block is an irregular corner site bounded by Washington, Avery and Mason Streets.

(✓) COMMENTS (SEE ATTACHED)   ( ) NO COMMENTS

DATE: 2/28/90

Douglas M
for FREDERICK P. SALVUCCI
SECRETARY

The Commonwealth of Massachusetts
Executive Office of Transportation & Construction
Office of the Secretary
10 Park Plaza, Room 3510
Boston, MA 02116-3969
Telephone 973-7000
TDD (617) 973-7306
Telefax (617) 523-6454

hael S. Dukakis
Governor
erick P. Salvucci
Secretary
and
B.T.A. Chairman

RECEIVED
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MEPA

EOTC COMMENTS ON THE FEIR FOR
COMMONWEALTH CENTER
BOSTON, MA
EOEA #7113

EOTC has reviewed the FEIR for the Commonwealth Center project. The project consists of a mix of office, retail and hotel space. As proposed in the FEIR, the project will contain a total of 1.4 million square feet of office space, approximately 100,000 square feet of retail, a 419 room hotel and two theaters with 499 and 199 seats respectively. It is located in the Downtown Crossing section of Boston. The project is bounded by Tremont, Boylston, and Washington Streets. The project will be constructed on two separate parcels, Parcel 30 (which will be Phase 1) and the Keith Block Parcel (which will be Phase 2). EOTC finds that the FEIR adequately addresses the transportation issues pertaining to this development.

Due to the location of this site near existing and proposed mass transit services and the mix of uses planned for the site, this proposed project has the potential to add needed facilities and services to the Downtown Crossing/Theater District area and as a result may serve to improve the quality of life for this area.

As shown from the FEIR, this project will depend heavily upon the use of mass transit for its daily activities. The FEIR forecasts that this project will generate over 12,500 transit trips each workday. This represents over 58% of all trips utilizing this site on a typical day. In addition the project will rely on over 3,400 trips by pedestrian travel, or almost 16% of all daily trips. Only 26% of all trips utilizing this site will be by automobile.

From the numbers presented in the FEIR, the success of this project's transportation needs are heavily dependent upon the upgrading of the existing mass transit system and the pedestrian walkways as they exist today. Present conditions show that the Green Line and Orange Line are operating over capacity for the peak hour periods. The MBTA is currently expanding station platforms and purchasing additional cars to expand capacity to meet present and future demand.

To this end, it is important that Commonwealth Center participate in this maintenance and upgrading of facilities upon which this project is so reliant upon for the successful movement of people to the site. While the FEIR has done a good job of presenting the analysis of the peak hour periods, specific commitments concerning MBTA improvements should be finalized with MBTA officials. By relying upon the MBTA to service over 58% of its transportation needs, the proponent will be able realize substantial savings which otherwise would have been necessary to provide parking and roadway capacity improvements.

EOTC feels certain that the proponent will be able to work in cooperation with the MBTA in resolving the financial issues in question. However, agreements establishing firm commitments to the improvements and daily maintenance needs of the system have not yet been reached. The following comments detail what type of contribution toward service improvement is expected from the proponent in order to provide reasonable mitigation for this project.

EXISTING TRANSIT SERVICE:

In the FEIR, the proponent has proposed the relocation of the Orange Line Boylston Street Southbound station. The FEIR describes this relocated entrance as being handicapped accessible and having direct pedestrian access to the Commonwealth Center project. The FEIR does not identify what level of responsibility Commonwealth Center will assume towards this station access relocation project. EOTC believes that the proponent should reach agreement with the MBTA as to the allocation of the full cost of this relocation as well as responsibility for the maintenance of this station. To this end, the proponent should contact the MBTA o participate in the "Adopt A Station" program. The location of he new handicapped station access is not clear in Figure 12 of he FEIR. In order to coordinate the construction and design lements of this relocated and handicapped accessible station, the roponent should work with the Construction Directorate office of he MBTA.

ROPOSED TRANSIT SERVICE

At present, the MBTA has two transit services under study hat would provide additional access to or near this site. The wo services under study are the Washington Street Replacement service and the South Boston Piers Transit Project. The provision of a direct connection to this site would allow for the direct passage of Green Line commuters to the site as well as future commuters on the Fort Point Channel and Washington Replacement Service. Even though this station is still under study, it is important that provisions be made to incorporate a high level of transit access for the users of Commonwealth Center. A direct access to the Boylston Station and the proposed new transit line will help accomplish this need. With this high quality access, this project be able to achieve the high transit share predicted in this EIR. As seen in Table 12 of the FEIR, the intersections of Tremont/Boylston will operate under constrained conditions for pedestrian levels of service under future year build conditions. To this end, the proponent should reexamine its position of not designing direct access to this station and should consider the potential implementation of this proposed station access into the design of this project.

TRANSPORTATION MANAGEMENT STRATEGIES:

Due to the uncertainty of the schedules for completion of the other two major participants in the proposed Transportation Management Association (TMA), it it crucial that Commonwealth Center implement the specific demand management strategies cited in the FEIR before the formulation of this TMA. In the proponent's Transportation Access Plan to be filed with the City of Boston, the proponent should explore the possibility of committing to undertake a vehicle survey each year to measure the number of auto trips generated from the site on an average day in order to determine which management strategies may be most effective in reducing the number of single occupant vehicles.

Because all of the parking for this project will be constructed in the Parcel 30 lot during Phase 1, it is unclear if all of the available parking spaces will be available from the opening of Phase 1. The proponent should meet with the Boston Air Pollution Control Commission to discuss applicable restrictions on he use of those parking spaces designated for Phase 2 until that hase is completed. According to the FEIR, there are 140 spaces esignated for Phase 2.

ROADWAY IMPROVEMENTS:

Table 23 of the FEIR lists the roadway intersection mprovements for the study area. In this list, the proponent tates that the MDPW and its Urban Systems and High Hazard limination Programs are sources for the funding for the majority f the intersection related mitigation. It has also listed One incoln Street and Boston Crossing as responsible for certain ntersection improvements. However, specific responsibility as to e designated parties required to undertake to the improvements isted in column two of the chart is unclear. This raises

This raises concerns as to whether or not the items listed in Table 23 will ever actually occur. The proponent, along with the proponents for Boston Crossing and One Lincoln Street will be expected to participate in the implementation of area roadway improvements that are required due to these projects and specific plans and agreements should be reached with the City of Boston in this matter.

SUMMARY:

In conclusion, EOTC views this project as an important addition to the vitality of downtown Boston. However, it is the responsibility of the developer to propose and commit to a proper mitigation scheme that will relieve the burdens placed on the transit and roadway infrastructure. In fulfilling this obligation, the proponent should work with the City and the MBTA to address roadway improvements and to ensure that this project has adequate access to the transit system and has fully explored the opportunity to tie into the proposed transit systems planned for the area.

02/25/90
TJR

LETTER 2 - THE COMMONWEALTH OF MASSACHUSETTS, EXECUTIVE OFFICE OF TRANSPORTATION AND CONSTRUCTION (EOTC)

Comment #1:

Topic: *MBTA Chinatown Station Improvements and Maintenance*

Comment: *EOTC believes that the Project Proponent should reach agreement with the MBTA as to the allocation of the full cost of relocating the stair and entrance to the Chinatown Outbound MBTA station as well as responsibility for the maintenance of this station.*

Response:

As part of the "Adopt A Station" program, the Project Proponent will provide for the full cost of relocating the stair and building a new entrance enclosure which is integrated into the overall building. In the event that the MBTA selects this location for a handicapped elevator, the Proposed Proponent will also provide for the cost of the elevator shaft and the entrance and maintain the entrance. The MBTA has requested that the Project Proponent maintain the station entrance, not the station (see Letter 3 Comment #2). The Project Proponent will be responsible for maintenance of the new street level entrance to the station. An enlarged plan of the building at the corner of Washington and Boylston Streets is included in Figure 6 of this report in order to clarify Figure 12 of the FPIR/FEIR. The Project Proponent will work with the Construction Directorate Office of the MBTA in order to coordinate the construction and design elements of this relocated and handicapped accessible station.

Comment #2:

Topic: *Design and Construction*

Comment: *The Proponent should reexamine its position of not designing direct access to the new Transitway Station at Hayward Place and should consider the potential implementation of this proposed station access into the design of this project.*

Response:

The Project Proponent has not taken the position of "not designing direct access to this station". The statement in the FPIR/FEIR (on page 177) "In anticipation of the possible MBTA tunnel location in Avery Street, the Project Proponent has abandoned possible plans to provide an underground link under Avery Street between Phase I and Phase II of the Project" may be confusing. The suggested underground link refers to the Project Proponent's original plan to connect the garages under both Phases of the Project. In order to accommodate the possible Transitway Line under the Avery Street tunnel, the Project Proponent has agreed not to link its underground garages on either side of Avery Street. However, the Project Proponent continues to be willing to consider direct access to the final new station location when selected. The Project Proponent has offered to provide for an MBTA tunnel connecting the Chinatown outbound platform with the new Transitway Station. This tunnel will run parallel to the Orange Line and the Project Proponent's underground slurry wall.

Comment #3:

Topic: *Transportation Management Strategies*

Comment: *It is crucial that Commonwealth Center implement the specific demand management strategies cited in the FPIR/FEIR (page 201) before the formulation of the TMA.*

Response:

The Project Proponent intends to contribute towards the implementation of these specific demand management strategies before the formulation of the TMA as detailed in the attached Transportation Access Plan Agreement (see Appendix A). The BTD will then establish a priority system to appropriately implement these specific strategies.

Comment #4:

Topic: *Phase II Parking*

Comment: *The Proponent should meet with the Boston Air Pollution Control Commission to discuss applicable restrictions on the use of those parking spaces designated for Phase II until that phase is completed.*

Response:

The Project Proponent has continuously been in contact with the Boston Air Pollution Control Commission (BAPCC) regarding the parking issue (see Appendix C). ABAPCC hearing will be scheduled in the near future.

From an optimal development standpoint, the Project Proponent had originally planned to build and open the parking garage in two separate phases. To accommodate the proposed MBTA Transitway Line along Avery Street, the Project Proponent has agreed to eliminate its original plan for a two-phase garage connecting below Avery Street and instead build a single underground garage on Parcel 30 in the first phase, for both Phase I and Phase II. The Project Proponent has studied building two separate garages, one under each phase (see Figure 7). This is not feasible for several reasons including:

1. A large portion of the Phase II land area, underneath the Paramount Theater, cannot be utilized for an underground garage without possible damage to this Landmark structure.

2. A separate parking garage below Phase II would be small, inefficient in configuration and therefore extremely costly.

3. Without the ability to share the Phase I garage entrance by connecting the two garages below Avery Street, the Phase II garage would require duplicate entrance ramps and additional curb cuts. The options for accessing the garage would be from Washington, Avery or Mason Street. The Washington Street frontage is an important extension of the Downtown Crossing retail shopping district and therefore no curb cuts are to be allowed in this area. Avery Street is planned to become a major new traffic artery from the Surface

Artery to Tremont Street. Adding curb cuts and parking traffic at this location would impair traffic flow. The third option, Mason Street, is fully utilized for all off street truck loading access.

The optimal development solution is to build the garage in two phases. Building the garage in one phase is an extremely costly upfront economic burden for the Project Proponent, which can be partially offset by opening and operating the garage upon the completion of Phase I.

The Project Proponent and the BTD have reached an agreement as part of the Transportation Access Plan Agreement which allows the Project Proponent to fully utilize the garage at the completion of Phase I but minimizes the number of office parking spaces available until Phase II is completed. At the completion of Phase I, the 140 Phase II office parking spaces will be temporarily added to the proposed 341 pool of public commercial spaces. At the completion of the Phase II office building the 140 spaces will revert back from public commercial spaces to office spaces for Phase II.

Comment #5:

Topic: *Area Wide Roadway Improvements*

Comment: *The Proponent, along with the Proponents for Boston Crossing and One Lincoln Street will be expected to participate in the implementation of area roadway improvements that are required due to these projects and specific plans and agreements should be reached with the City of Boston in this matter.*

Response:

The Project Proponent is participating with the Proponent of Boston Crossing and One Lincoln in the implementation of area roadway improvements. The Project Proponent has agreed to contribute toward the implementation of these improvements (see Table 1 and 2). The Boston Transportation Department will proceed with the implementation on a priority basis. The Project Proponent's specific plan is detailed in the attached Transportation Access Plan Agreement (see Appendix A).

LETTER 3

**MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY**

Construction Directorate
Ten Park Plaza, Boston, MA 02116

RECEIVED
FEB 26 1990
MEPA

February 26, 1990

Mr. John DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Floor
Boston, Massachusetts 02108

Attention: Ms. Jacki Wilkins
MEPA Unit

Subject: EOEA File No. 7113
Commonwealth Center, Ltd.
Final/Environmental Impact Report (FEIR)

Dear Secretary DeVillars:

The Massachusetts Bay Transportation Authority (MBTA) has reviewed the above-referenced FEIR for the Commonwealth Center Project and offers the following comments on the projects impact on MBTA operations, existing facilities, and planned facilities:

Operations - The project is well situated with respect to access to the mass transit system thereby providing an opportunity for a significant portion of the trips generated by the project to access the site by mass transportation.

This advantageous situation will result in increased passenger volumes on transit routes at the peak ridership location during the peak travel period. Passenger volumes at the peak point during the peak period dictate operating requirements for each route.

To address increasing ridership the MBTA has lengthened platforms on both the Orange and Red Lines to accommodate six car trains. Six car trains currently operate on both lines. The MBTA is also considering the future purchase of 100 passenger cars for the Green Line. These vehicles will be used to both replace existing equipment and expand operations.

In the absence of an analysis from the project proponent, it would appear that even with the recent and planned capacity improvements, the proposed project will add to MBTA operating requirements.

To mitigate these impacts the project proponent proposes a program of staggered and flexible work hours. It is recommended that the project proponent establish specific goals for peak period trip generation in order to assure the success of these mitigation measures.

Existing MBTA Facilities - The proposed project will impact the MBTA's Southbound entrance to Chinatown Station on the Orange Line. The proponent proposes to relocate the station entrance, including an elevator for platform access, into the building loggia. In addition to constructing the new entrance it is recommended that the project proponent maintain the station entrance.

Design concerns to be addressed are:

- Incorporation of the Orange Line/Chinatown station within the Commonwealth Center development raises issues of visibility to pedestrians and shoppers along Washington Street. Clear signage must be provided to ensure visibility and hence accessibility to the enclosed station entrance.
- As measured by stairway width, the new entrance will need to provide at least as much egress capacity as the existing entrance. More detailed plans are needed to verify whether the proposed entrance maintains this capacity.
- Additional stairway width at this station may be required to support egress from a future Transitway station (in the Essex Street alignment) or a possible extension of the Orange Line southbound platform to Avery Street (in the Avery Street alignment).

Planned MBTA Facilities - In the Commonwealth Center Project area, the MBTA is advancing three major projects which will require continued coordination of design and construction. These projects are Boylston Station restoration, Replacement/Transit Improvement Project and the South Boston Piers Project.

- The Boylston Station Restoration Project consists of restoration of the existing Boylston Station. Although near the Commonwealth Center Project, the two projects are largely independent.

Mr. John DeVillars, Secretary
Page 3

- Plans for the Replacement/Transit Improvement Project and the South Boston Piers Project result in a new subway abutting the site and potential for improved pedestrian connections to Boylston Station and a future transitway station:

  o A possible entrance/exit serving the existing Green Line/Boylston Station via a passageway beneath Tremont Street would do much to alleviate pedestrian/vehicular conflicts. The FEIR shows a possible location for this entrance adjacent to Evans House on Tremont Street (shown in Figure 12 of the FEIR); this entrance could also support Commonwealth Center's through-block pedestrian link. Specific elements of this entrance and passageway are contingent upon connections made at the Green Line/Boylston Station by the proposed South Boston Transitway and the Replacement Transit Improvement Service. Provisions should be made in the Commonwealth Center's construction plan which do not preclude a future pedestrian connection from Boylston Station. 6.

  o Under the South Boston Piers Project proposed Avery Street alignment for a transitway, either an extension of the southbound Orange Line platform or a pedestrian passageway between Boylston and Avery Streets would be necessary to provide for passenger transfers to a future Transitway station at Hayward Place. This will require coordination with Commonwealth Center's slurry wall location both to ensure that adequate width is provided and to identify joint construction opportunities. 7. In addition, ventilation is required both for the Orange Line on Washington Street in the vicinity of Hayward Place as well as for the Transitway at this location under the Avery Street alignment. The developers of Commonwealth Center have agreed to provide space for vent stacks on Avery Place north of the public open space.

Thank you for the opportunity to comment on this project. Should you have any questions, please call me at 722-3152.

Sincerely,

Donald J. Kidston

Donald J. Kidston
Project Manager/Development

JK:lf

LETTER 3 - MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (MBTA)

Comment #1:

Topic: *Impact upon MBTA Operating Requirements*

Comment: *The Project Proponent must establish specific goals for peak period trip generation in order to assure the success of the proposed mitigation measures.*

Response:

As discussed in the Transportation Access Plan Agreement (Appendix A), the specific goals and objectives for peak period trip generation are:

- A 70% rate of transit usage among persons commuting to work at the Project, and
- An average of 1.9 persons in each automobile used for commuting to and from the Project.

Comment #2:

Topic: MBTA Chinatown Station

Comment: *Existing MBTA Facilities: In addition to constructing the new entrance, it is recommended that the Project Proponent maintain the station entrance.*

Response:

The Project Proponent will be responsible for maintenance of the new street level entrance to the station as well as the proposed handicapped elevator entrance.

Comment #3:

Topic: Signage

Comment: *Clear signage must be provided to ensure visibility and hence accessibility to the enclosed station entrance.*

Response:

The Project Proponent will provide clear signage to ensure visibility and accessibility to the enclosed station entrance. The Project Proponent is committed to providing a safe and enjoyable pedestrian environment where pedestrian routes and pathways are provided with adequate signage and lighting (see the Transportation Access Plan Agreement in Appendix A).

Comment #4:

Topic: *Entrance Capacity*

Comment: *More detailed plans are needed to verify whether the proposed entrance maintains this (the existing) capacity.*

Response:

A more detailed enlargement of Figure 12 of the FPIR/FEIR illustrates that the proposed entrance maintains the egress capacity of the existing entrance (see Figure 6 of this report).

Comment #5:

Topic: *Additional Stairway Width*

Comment: *Additional stairway width at this station may be required to support egress from a future Transitway station (in the Essex Street alignment) or a possible extension of the Orange Line southbound platform to Avery Street (in the Avery Street alignment).*

Response:

Upon selection of the preferred alignment by BTD and the resultant egress requirements and stairway width, the Project Proponent will accommodate the additional stairway width required into its design and construction. The Project Proponent will coordinate with appropriate public agencies to obtain necessary information prior to commencement of the construction documents.

Comment #6:

Topic: *Future Pedestrian Connection*

Comment: *Provisions should be made in the Commonwealth Center's construction plan which do not preclude a future pedestrian connection from Boylston Station.*

Response:

In order to provide for a future pedestrian connection from the Boylston Station, the Project Proponent has relocated the Child Care Center from the area along Tremont Street to Boylston Street. This allows for a future pedestrian connection in the location shown in Figure 6 of this report. The Project Proponent will coordinate with appropriate public agencies to obtain necessary information prior to commencement of the construction documents. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

Comment #7:

Topic: Construction

Comment: *Provision for passenger transfers to a future Transitway station will require coordination with Commonwealth Center's slurry wall location both to ensure that adequate width is provided and to identify joint construction opportunities.*

Response:

The Project Proponent will coordinate its slurry wall location to ensure adequate strength, performance and width and seek to identify joint construction opportunities. The Project Proponent will coordinate with appropriate public agencies to obtain necessary information prior to commencement of the construction documents. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

The Project Proponent reiterates its commitment to accommodate local Orange Line and the new Transitway line emergency ventilation requirements. This accommodation includes subsurface and surface elements within the project in the area of Avery Place. The Project Proponent will coordinate with appropriate public agencies to obtain necessary information prior to commencement of the construction documents. The MBTA will secure all necessary approvals and pay the incremental costs of construction.

BOSTON
TRANSPORTATION
DEPARTMENT

ONE CITY HALL PLAZA/ROOM 721.
BOSTON, MASSACHUSETTS 02201
(617) 725-4680/FAX (617) 523-4475

BTD Comments
Commonwealth Center FPIR

Comments numbered as in FPIR

Revision of trip distribution assumptions: The travel time comparisons used in the FPIR are instructive, but limited. In the first place, it is not certain that a difference in travel time, between approaching the project site via Boylston St. or Kneeland St., of 45 seconds or 2 minutes (10 or 28%) (as reported on page 52) would result in 100 percent of travelers choosing the former route. Secondly, these differences are as measured today, with a circuitous route leading to Kneeland St. In the future, when Essex St. is widened, it will become the preferred route. The relative travel times, and thus the choice of route, will then be very different. 1.

Analysis of additional intersections: Adequate. The Boston Crossing FPIR rates Kneeland/Surface Artery C in the PM, and Church Green D in the AM, but presumably the differences are attributable to the differences in methodology discussed in #4.

Impact on regional network: Adequate.

Description of differences in intersection analysis: Adequate.

Pedestrian desire lines: Adequate.

Analysis of pedestrian levels of service: Adequate. The conditions portrayed, however, are serious, especially at Boylston and Tremont. See #7.

The most serious pedestrian conditions are projected to occur at Tremont/Boylston. The recommendation there is to widen the crosswalk to create more space for crossing pedestrians. This solution is not optimal, since it does not solve the problem of insufficient dwell space on the sidewalk for pedestrians waiting for the crossing light. The Developer should re-analyze this intersection with

2. adjusted signal timings, with the goal of improving levelsof service for pedestrians. BTD would like to see the effect on vehicular levels-of-service of timing the signals to ensure a pedestrian level-of-service of no worse than "impeded".

8. Pedestrian connections to transit stations: Adequate.

9. Circulation patterns: Adequate.

10. Hotel porte-cochere: Adequate.

11. Taxi drop-off: The BTD has reservations about the taxi drop-off plan, both the sufficiency of the porte-cochere's dimensions and the practicality of storing taxis around the corner from the hotel entrance. The Developer and its hotel vendor will strictly be held responsible for keeping Avery St. clear of hotel-related vehicles. 3.

.3. Loading docks: The FPIR indicates that there will be an average of 74 peak-hour truck deliveries to the site. This estimate is based on ITE rates. If it is correct, each loading dock would have to be able to accommodate 5 trips per hour, which is unlikely. The developer must further demonstrate the sufficiency of the number of docks. 4.

4. Phasing of parking spaces: The indication is that although the project will be built in two phases, the parking will all come on line in the first phase. Thus the 140 spaces intended for use by tenants of the Keith Block building will be built before that building is built. And, should Phase II never happen, there would be pressure for the entire 600 spaces to be made available for the Parcel 30 building. A provision should be made to ensure that the Phase II spaces are only put into service when the Phase II building opens. 5.

›. Parking demand: Adequate, given the provision above.

sponses to other comment letters: in response to the letters of
th EOTC and EOEA, the developer states that the project "is not
ntingent upon or limited by assumed Essex Street two-way
erations." BTD disagrees. As has been established conclusively
analysis in this Access Plan, as well as those for Boston
ossing and One Lincoln Street, a widened two-way Essex Street
ovides critical westbound capacity for traffic generated by this
oject and Boston Crossing. Without it, Church Green and the
eeland/Surface Artery intersection are overburdened.

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LETTER 4 - CITY OF BOSTON TRANSPORTATION DEPARTMENT (BTD)

Comment #1:

Topic**:** *Trip Distribution Assumptions*

Comment: *Revise the trip distribution assumption that a slightly shorter travel time through Boylston Street will result in 100% usage of that route. Also consider the widened Essex Street as the preferred route.*

Response:

A redistribution of 50 percent of inbound vehicle trips from the west to a bi-directional Essex Street will serve to adjust project-related vehicle volumes at Study area intersections thus affected, without significant alteration to projected peak hour Levels of Service at these locations.

The FPIR/FEIR's analyses reflected a redistribution of trips from the south which directed 33 percent of these inbound trips to a two-way Essex Street. Because of access opportunities to the site via Boylston Street from the west, and via Tremont Street from the north (in conjunction with the results of timed-travel runs via these routes), no alteration to the assumed distribution and assignment of inbound trips to these routes was undertaken in the FPIR/FEIR analyses. It should be noted that all outbound trips to both the north and the south were assumed in both the DPIR/DEIR and the FPIR/FEIR to use Essex Street eastbound from the site to the Central Artery and/or Surface Artery.

To determine the potential impact of additional inbound site access trips to a two-way Essex Street in this SFEIR document, 50 percent of inbound vehicular trips from the west during both the AM and PM Peak Hour have been assigned to Essex Street westbound to Avenue DeLafayette, Hayward Place, and Avery Street westbound, to Tremont Street southbound to the site. These represent those trips from the est, travel runs suggesting short travel times via Boylston Street eastbound, remain on the Mass Turnpike to the South Station and Kneeland Street exit to the Surface Artery/Essex Street intersection. The remaining 50 percent of access trips from the west remain assigned to Boylston Street eastbound to the site from the Copley Square exit of the Mass Turnpike, from the Arlington Street off-ramp of Storrow Drive, or from other routes west of the site. The redistribution from the west, in conjunction with the previous redistribution of trips from the south conducted within the DPIR/DEIR, effectively results in a total of approximately 26 percent of all inbound vehicular access trips using Essex Street westbound from the Massachusetts Turnpike and/or the Surface Artery.

In order to determine the potential impact of this redistribution, those intersections which may principally be affected by either an increase or a decrease in vehicular volumes have been reanalyzed. These intersections include:

- Boylston Street/Charles Street (which would be expected to have a reduction in peak hour site - related trips),
- Boylston Street/Tremont Street (which would be expected to have an alteration in the

directional approaches of site-related trips but not a reduction in volume),

- Tremont Street/Avery Street (which would be expected to have an increase in site-related peak hour trips),
- Washington Street/Hayward Place/Avery Street (which would be expected to incur an increase in volume due to site-related trips), and
- Essex Street/Surface Artery/Lincoln Street (which would be expected to incur an increase in site-related volume).

Table 9 displays the results of capacity analyses at these intersections during both the AM and PM Peak Hours, assuming the above redistribution. Table 10 shows the results of analyses assuming the distribution reflected in the FEIR/FPIR.

Table 9. Capacity Analyses/Build Conditions (1996), Proposed Project, Assuming Redistribution of 50% of Trips from West to Essex Street

Signalized Intersection Location	**AM Peak Hour** Avg. Veh. Delay (sec.)	**LOS**	**PM Peak Hour** Avg. veh. Delay (sec.)	**LOS**
Boylston Street/ Charles Street/	14.03	B	16.49	C
Boylston Street/ Tremont Street (as mitigated)	29.92	D	33.22	D
Tremont Street/ Avery Street	9.31	B	15.59	C
Washington Street/ Hayward Place/ Avery Street	9.95	B	21.30	C
Essex Street/ Surface Artery/ Lincoln Street (as mitigated)	24.95	C/D	38.79	D/E

Table 10. Capacity Analyses/Build Conditions (1996), Proposed Project, Assuming No Redistribution of Trips from West to Essex Street

Signalized Intersection Location	AM Peak Hour Avg. Veh. Delay (sec.)	AM Peak Hour LOS	PM Peak Hour Avg. veh. Delay (sec.)	PM Peak Hour LOS
Boylston Street/ Charles Street/	13.52	B	16.22	C
Boylston Street/ Tremont Street (as mitigated)	34.37	D	31.85	D
Tremont Street/ Avery Street	10.24	B	17.31	C
Washington Street/ Hayward Place Avery Street	11.61	B	23.07	C
Essex Street/ Surface Artery/ Lincoln Street (as mitigated)	26.21	D	40.62	D/E

A comparison of resulting peak hour Levels of Service, with the redistribution in Table 9 and without in Table 10, displays a consistency in intersection operating Levels of Service, with minor alterations in average vehicle delays.

Comment #2:

***Topic*:** *Signal Timing Adjustments*

Comment: *Examine the effect on vehicular Level-of-Service if signal timings are adjusted to improve the pedestrian Level-of-Service to no worse than "impeded".*

Response:

Pedestrian operations at the Tremont Street/Boylston Street intersection can be improved to acceptable levels of "impeded" or better through implementation of widened crosswalks on all approaches to the intersection, a mitigation can be accomplished without significant impact upon existing street furniture at the intersection.

The pedestrian Levels of Service at the Tremont Street/Boylston Street intersection within the FPIR/FEIR reflect "*constrained*" operations, as described by Pushkarev and Zupan (Urban Space for Pedestrians, 1975). "*Constrained*" operations are characterized by average crosswalk flows in excess of six persons per minute of walk time per foot of available crosswalk width. In order to determine the signal timings and phasings which would provide for pedestrian flows within "*impeded*" operations of six or fewer persons, the intersection has been reanalyzed at Year 1996 Build volumes, with proposed mitigations providing for an exclusive right turn lane on Boylston Street eastbound. Table 11 displays the results of pedestrian Levels of Service analyses during the AM, Mid-Day and PM Peak Hours, with the requisite 46 seconds of all-pedestrian phase in the AM and Mid-Day Peak Hours, and the 38 seconds of all-pedestrian phase in the PM Peak Hour necessary to allow for average crosswalk flows of six or fewer persons within the existing ten feet of available crosswalk width on each approach at this intersection.

Table 11. Tremont Street/Boylston Street Pedestrian Service Levels, Build Conditions (1996) With Re-Timed All-Pedestrian Phasing and Existing Crosswalk Widths

Peak Hour	Crosswalk	Total Volume	Average Crosswalk Flow (Peds/Min/Foot)	Required Depth of Reservoir Space (ft)	Service Level
AM	North	1380	6.00	15.00	Impeded
	South	780	2.18	5.5	Impeded
	East	657	2.86	7.2	Impeded
	West	1039	4.51	11.3	Impeded
Mid-Day	North	1380	6.00	15.0	Impeded
	South	1508	4.21	10.5	Impeded
	East	1139	4.95	12.4	Impeded
	West	1008	4.38	10.9	Impeded
PM	North	1143	6.02	15.1	Impeded
	South	1013	3.20	8.0	Impeded
	East	591	3.11	7.8	Impeded
	West	1082	5.69	14.2	Impeded

Table 12 further displays the resulting intersection operations, for vehicular movement, which result during the AM and PM Peak Hours, considering the above-noted assumptions relative to all-pedestrian phase timing necessary to provide for pedestrian flows of no more than 4 persons per minute of existing available crosswalk width.

As displayed in Table 12, Peak Hour intersection operations for vehicular movement are projected to be at Level "F" during both the morning and afternoon, following signal re-timing which would provide for pedestrian flows in the impeded rather than the constrained range.

Table 12. Peak Hour Capacity Analyses, Tremont Street/Boylston Street, as Mitigated, With Pedestrian Flows at Impeded Level Within Existing Crosswalk Widths

Peak Hour	Average Vehicle Delay in Seconds	Level of Service
AM	126.7	F
PM	128.6	F

In order to achieve a balance of impeded pedestrian flows of six persons or fewer per minute per foot of available crosswalk width and acceptable vehicular Levels of Service of "D" or better, crosswalk widths of 28 feet would be necessary on each approach to this intersection. Additional crosswalk width, in conjunction with all-pedestrian phase timing of 18 seconds during the AM and Mid-Day Peak Hours, and 15 seconds in the PM Peak Hour, would result in peak hour Levels of Service of "D", as reflected in Table 13.

The Levels of Service of "D" during both peak hours, assuming 28-foot wide crosswalks, would result in further improved pedestrian operations within the impeded or better range, as displayed in Table 14.

Table 13. Peak Hour Capacity Analyses, Tremont Street/Boylston Street, as Mitigated, Assuming 28-Feet Wide Pedestrian Crosswalks

Peak Hour	Average Vehicle Delay in Seconds	Level of Service
AM	39.8	D
PM	39.9	D

Table 14. Tremont Street/Boylston Street Pedestrian Service Levels, Build Conditions (1996), With 28-Feet Wide Crosswalks

Peak Hour	Crosswalk	Total Volume	Average Crosswalk Flow (Peds/Min/Foot)	Required Depth of Reservoir Space (ft)	Service Level
AM	North	1380	5.48	13.7	Impeded
	South	780	3.10	7.8	Unimpeded
	East	657	2.61	6.5	Impeded
	West	1039	4.12	10.3	Impeded
Mid-Day	North	1380	5.48	13.7	Impeded
	South	1508	5.98	15.0	Impeded
	East	1139	4.52	11.3	Impeded
	West	1008	4.00	10.0	Impeded
PM	North	1143	5.44	13.6	Impeded
	South	1013	4.82	12.1	Unimpeded
	East	591	2.81	7.0	Impeded
	West	1082	5.15	12.9	Impeded

Measurements of other existing crosswalks of Tremont Street in the vicinity of the Boston Common have also been taken in the field to determine their average widths. The existing crosswalk on Tremont Street at the Park Street Station of the Green Line measures 51.5 feet in width while Tremont Street crosswalks at Temple Place, West Street, and Avery Street measure 16 feet, 15 feet, and 13 feet in width, respectively. The crosswalks at the Tremont Street/ Boylston Street intersection may be the most narrow on the Tremont Street corridor in the vicinity of the Boston Common.

Considering the existing and projected pedestrian volumes associated with the Boylston Station of the Green Line and the larger Midtown Cultural District, their widening to dimensions more applicable to the pedestrian volume load is recommended. The findings from a field reconnaissance point to insignificant impact upon existing street furniture in the vicinity of the Tremont Street/Boylston Street intersection with the implementation of 28 feet wide crosswalks. Full details of this field reconnaissance are detailed bellow and keyed to the accompanying Figure 5.

Existing STOP-lines on Boylston Street eastbound and on Tremont Street southbound are an average distance of 22 feet from the intersecting street's pavement edge. The existing crosswalks, averaging 10 to 11 feet in width, are located within those 22 feet wide sections. No formal crosswalks are provided on the Boylston Street westbound and Tremont Street northbound approaches to this intersection, but all pedestrian operational analyses related to this project have assumed crosswalks resembling two existing crosswalks in surface width. The specific issues at each of the four crosswalks are as follows:

1. Boylston Street Eastbound Approach

The southern sidewalks edge of the Boylston Street eastbound approach to the intersection contains a sign restricting on-street parking at a point 30 feet from the Tremont Street pavement edge. The northern sidewalk edge of this approach contains no street furniture of any kind. Thus, if the Boylston Street eastbound STOP-line were to be relocated to a point 30 feet west of the Tremont Street pavement edge, a 28-feet wide crosswalk could be implemented without significant impact upon existing street furniture on this approach.

2. Tremont Street Southbound Approach

Presently, the western sidewalk edge of the Tremont Street southbound approach to the intersection has no street furniture. On the eastern edge, an existing signal standard is located 17.5 feet north of the Boylston Street pavement edge. In addition, an existing light pole and signal controller box are located 38 and 41 feet, respectively, from the Boylston Street pavement edge on the eastern sidewalk edge of Tremont Street southbound. Thus, with the exception of the existing signal standard on the eastern edge, which presently is located within the sidewalk limits of the existing crosswalk, there are no elements of street furniture which would be impacted by implementation of a 28 feet wide crosswalk on the Tremont Street southbound intersection approach. It should be noted that an existing handicapped ramp is located on the radial curve where the Boylston Street eastbound and Tremont Street southbound approaches meet. The ramp is presently located outside of the two existing crosswalks on these approaches.

3. Tremont Street Northbound Approach

The western sidewalk edge of the Tremont Street northbound approach to the intersection contains a signal standard 14.5 feet south of the Boylston Street pavement edge. A light pole located 29 feet south of the Boylston Street pavement edge, also serves as a mounting pole for a parking restriction sign. Other street furniture within 30 feet of the Boylston Street pavement edge on the western edge of Tremont Street include four newspaper vending boxes which are chained to the existing signal standard and light pole. On the eastern sidewalk edge of Tremont Street northbound a light pole is located 29 feet south of the Boylston Street pavement edge. There is also an existing handicapped ramp located 11 feet from the Boylston Street edge. With the exception of the existing signal standard and four newspaper vending boxes on the western edge of Tremont Street northbound, no other street furniture is expected to be impacted by the proposed implementation of a 28 feet wide crosswalk on this approach. Implementation of a crosswalk of this width would also serve to incorporate the existing handicapped ramp into this crosswalk.

4. Boylston Street Westbound Approach

On the southern sidewalk edge of the Boylston Street westbound approach to the intersection, the only existing street furniture is a signal standard located 14 feet to the east of the Tremont Street pavement edge. On the north edge of this approach there is no street furniture which would potentially be impacted by the implementation of a 28 feet wide crosswalk on this approach, with the possible exception of an existing storm drain gate located on the radial curve at which the Tremont Street and Boylston Street pavements meet.

Comment #3:

Topic: *Taxi Drop-off*

Comment: *The BTD has reservations about the taxi drop-off plan, both the sufficiency of the porte-cochere's dimensions and the practicality of storing taxis around the corner from the hotel entrance.*

Response:

As detailed in the Transportation Access Plan Agreement (see Appendix A) the Project Proponent will provide a doorman/valet at the hotel entrance, whose responsibility will be to prevent taxis or other vehicles queueing onto Avery Street departing or waiting at the hotel. The Project Proponent will also provide an illuminated signal at the corner of Washington and Avery Streets and controlled by the hotel doorman/valet for the purpose of calling taxi service from the taxi stand on Washington Street to the hotel entrance.

Comment #4:

Topic: *Loading Docks*

Comment: *The Proponent must further demonstrate the sufficiency of the number of the docks.*

Response:

As indicated on the attached list of recently approved and operating projects, the Project Proponents proposed number of loading docks of 1 per 167,000 square feet is well within the range of practical acceptability and sufficiency. (See Table 15).

Table 15. Existing Loading Dock Ratios for Projects in the Vicinity of Commonwealth Center Project Site

Project	Total SF	Loading Docks	Ratio
Rowes Wharf	665,000	5	1/133,000 sf
125 Summer Street	463,961	3	1/155,000 sf
Commonwealth Center	**1,840,000**	11	**1/167,000 sf**
75 State Street	715,000	3	1/238,000 sf
International Place	1,027,292	2	1/514,000 sf

Comment #5:

Topic: *Phase II Parking Spaces*

Comment: *A provision should be made to ensure that the Phase II spaces are only put into service when the Phase II buildings open.*

Response:

The Project Proponent has continuously been in contact with the Boston Air Pollution Control Commission (BAPCC) regarding the parking issue (see Appendix C). A BAPCC hearing will be scheduled in the near future.

From an optimal development standpoint, the Project Proponent had originally planned to build and open the parking garage in two separate phases. To accommodate the proposed MBTA Transitway Line along Avery Street, the Project Proponent has agreed to eliminate its original plan for a two-phase garage connecting below Avery Street and instead build a single underground garage on Parcel 30 in the first phase, for both Phase I and Phase II. The Project Proponent has studied building two separate garages, one under each phase (see Figure 7). This is not feasible for several reasons including:

1. A large portion of the Phase II land area, underneath the Paramount Theater, cannot be utilized for an underground garage without possible damage to this Landmark structure.

2. A separate parking garage below Phase II would be small, inefficient in configuration and therefore extremely costly.

3. Without the ability to share the Phase I garage entrance by connecting the two garages below Avery Street, the Phase II garage would require duplicate entrance ramps and additional curb cuts. The options for accessing the garage would be from Washington, Avery or Mason Street. The Washington Street frontage is an important extension of the Downtown Crossing retail shopping district and therefore no curb cuts are to be allowed in this area. Avery Street is planned to become a major new traffic artery from the Surface Artery to Tremont Street. Adding curb cuts and parking traffic at this location would impair traffic flow. The third option, Mason Street, is fully utilized for all off street truck loading access.

The optimal development solution is to build the garage in two phases. Building the garage in one phase is an extremely costly upfront economic burden for the Project Proponent, which can be partially offset by opening and operating the garage upon the completion of Phase I.

The Project Proponent and the BTD have reached an agreement as part of the Transportation Access Plan Agreement which allows the Project Proponent to fully utilize the garage at the completion of Phase I but minimizes the number of office parking spaces available until Phase II is completed. At the completion of Phase I, the 140 Phase II office parking spaces will be temporarily added to the proposed 341 pool of public commercial spaces. At the completion of the Phase II office building the 140 spaces will revert back from public commercial spaces to office spaces for Phase II.

LETTER 5

RECEIVED
FEB 28 1990
MEPA

February 26, 1990

Mr. John DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Fl.
Boston, MA. 02202

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ment
tment

. Flynn
Mayor

Downey
Director

oom 805
tts 02201
725-3850

ATTN: MEPA Unit, Jacki Wilkins EOEA #7113, The Commonwealth Center Final Environmental Impact Report.

Dear Secretary DeVillars:

The City of Boston Environment Department has reviewed the Commonwealth Center Final Environmental Impact Report and would like to submit our comments:

1. The FEIR states that the traffic related projections are not dependent on the widening of Essex Street, however this is probably not the case. The traffic assumptions appear to be flawed, in that they are based on travel time runs rather than ease of access, impediments to flow, etc. Therefor, the proponent assumes a higher use of Boylston St. However, this analysis probably does not represent accurately the usage of Essex St. and, as such, the project's traffic impacts will be greater if Essex St. is not widened. The traffic anaylsis should be redone taking into account the possible effects of an unchanged Essex Street. **1.**

2. It appears from the FEIR that the pedestrian environment could be made more inviting and safe. The premise for pedestrian activity should be that the pedestrian is more important than the car rather than the other way around. The proponent should consider how to achieve a better and safer pedestrian environment. **2.**

3. Although we are satisfied with the historical and archaeological analysis, there are still some unresolved issues including the Evans House. A decision regarding the fate of the Evans House will be witheld until a presentation is made before the Boston Landmarks Commission.

I look forward to future opportunities to comment.

Sincerely,

L M Downey

L.M. Downey
Director

LMD/DKB/90

Air Pollution Control, Boston Art, Back Bay Architectural, Beacon Hill Architectural, Boston Landmarks and the Conservation Commissions

LETTER 5 - CITY OF BOSTON ENVIRONMENTAL DEPARTMENT (BED)

Comment #1:

Topic: Additional Traffic Analysis

Comment: The traffic analysis should be redone taking into account the possible effects of an unchanged Essex Street.

Response:

Intersection peak hour operations in the Study Area can operate at acceptable Levels of Service, as mitigated, with or without a two-way Essex Street, and following a redistribution of vehicle trips from the west to a westbound Essex Street.

The FPIR/FEIR's analyses reflected a redistribution of trips from the south which directed 33 percent of these inbound trips to a two-way Essex Street. Because of access opportunities to the site via Boylston Street from the west, and via Tremont Street from the north (in conjunction with the results of timed-travel runs via these routes), no alteration to the assumed distribution and assignment of inbound trips to these routes was undertaken in the FPIR/FEIR analyses. It should be noted that all outbound trips to both the north and the south were assumed in both the DPIR/DEIR and the FPIR/FEIR to use Essex Street eastbound from the site to the Central Artery and/or Surface Artery.

To determine the potential impact of additional inbound site access trips to a two-way Essex Street in this SFEIR document, 50 percent of inbound vehicular trips from the west during both the AM and PM Peak Hour have been assigned to Essex Street westbound to Avenue DeLafayette, Hayward Place, and Avery Street westbound, to Tremont Street southbound to the site. These represent those trips from the west, which, despite timed travel runs suggesting shorter travel times via Boylston Street eastbound, remain on the Mass Turnpike to the South Station and Kneeland Street exit to the Surface Artery/Essex Street intersection. The remaining 50 percent of access trips from the west remain assigned to Boylston Street eastbound to the site from the Copley Square Exit of the Mass Turnpike, from the Arlington Street off-ramp of Storrow Drive, or from other routes west of the site. The redistribution from the west, in conjunction with the previous redistribution of trips from the south conducted within the DPIR/DEIR, effectively results in a total of approximately 26 percent of all inbound vehicular access trips using Essex Street westbound from the Massachusetts Turnpike and/or the Surface Artery.

In order to determine the potential impact of this redistribution, those intersections which may principally be affected by either an increase or a decrease in vehicular volumes have been reanalyzed. These intersections include:

- Boylston Street/Charles Street (which would be expected to have a reduction in peak hour site - related trips),
- Boylston Street/Tremont Street (which would be expected to have an alteration in the directional approaches of site-related trips but not a reduction in volume),

- Tremont Street/Avery Street (which would be expected to have an increase in site-related peak hour trips),
- Washington Street/Hayward Place/Avery Street (which would be expected to incur an increase in volume due to site-related trips), and
- Essex Street/Surface Artery/Lincoln Street (which would be expected to incur an increase in site-related volume).

Table 16 displays the results of capacity analyses at these intersections during both the AM and PM Peak Hours, assuming the above redistribution. Table 17 shows the results of analyses assuming the distribution reflected in the FPIR/FEIR.

Table 16. Capacity Analyses/Build Conditions (1996), Proposed Project, Assuming Redistribution of 50% of Trips from West to Essex Street

Signalized Intersection Location	**AM Peak Hour** Avg. Veh. Delay (sec.)	**LOS**	**PM Peak Hour** Avg. veh. Delay (sec.)	**LOS**
Boylston Street/ Charles Street/	14.03	B	16.49	C
Boylston Street/ Tremont Street (as mitigated)	29.92	D	33.22	D
Tremont Street/ Avery Street	9.31	B	15.59	C
Washington Street/ Hayward Place/ Avery Street	9.95	B	21.30	C
Essex Street/ Surface Artery/ Lincoln Street (as mitigated)	24.95	C/D	38.79	D/E

Table 17. Capacity Analyses/Build Conditions (1996), Proposed Project, Assuming No Redistribution of Trips from West to Essex Street

Signalized Intersection Location	AM Peak Hour Avg. Veh. Delay (sec.)	AM Peak Hour LOS	PM Peak Hour Avg. veh. Delay (sec.)	PM Peak Hour LOS
Boylston Street/ Charles Street/	13.52	B	16.22	C
Boylston Street/ Tremont Street	34.37	D	31.85	D
Tremont Street/ Avery Street (as mitigated)	10.24	B	17.31	C
Washington Street/ Hayward Place Avery Street	11.61	B	23.07	C
Essex Street/ Surface Artery/ Lincoln Street (as mitigated)	26.21	D	40.62	D/E

The results of those analyses display that although average vehicle delays during either peak hour may be marginally improved or exacerbated, in no case does a significant decrease in peak hour Level of Service occur as a result of the redistribution.

In summary, whether Essex Street remains one-directional, or is reconstructed to provide for two-directional vehicle movement, study area intersections principally affected by Essex Street's directionality have been shown to operate at acceptable Levels of Service of "D" or better within varying distribution assumptions which assign as few as none, or as many as 26 percent of all inbound trips to a westbound Essex Street.

Traffic access to the project site has been shown to be accommodated by existing and mitigated study area intersection configurations, both with and without two-way operations on Essex Street.

Comment #2:

Topic: Pedestrian Environment

Comment: The Proponent should consider how to achieve a better and safer pedestrian environment.

Response:

The Proposed Project reinforces the pattern of streets and alleyways in the area by providing pedestrian through-block connections between Washington and Tremont Streets, and Avery and Boylston Streets. The primary pedestrian connector is the enclosed, two story retail arcade that runs parallel to Avery Street on Parcel 30 between the hotel and the office building (see Figure 8). A secondary pedestrian connection is made from this arcade to the office building lobby entry on Boylston Street. The arcade acts to break up the Parcel 30 block into two distinct building massings. By maintaining existing private ways which border the site, a physical separation is provided between the project components and the adjacent buildings without compromising the continuity of streetwalls.

Though block connections are also provided in the Keith block, connecting the Washington Lobby to the new public open space at Avery Street.

The Proposed Project design also includes improvements to the streetscape through masonry sidewalk paving in and around the site, traditional sidewalk light standards, improved handicapped access to all public areas within the Project, and a program of clear, yet unobtrusive building graphics and signage. Multiple storefront entries and entrances to the Project's different buildings at street level animate the pedestrian environment. A covered, sheltered entrance for the MBTA Orange Line station provides for greater pedestrian safety and comfort.

Furthermore, the presence of the hotel, as a 24-hour operation, and the availability of security guards for the office buildings will increase the neighborhood safety and will provide a secure pedestrian environment.

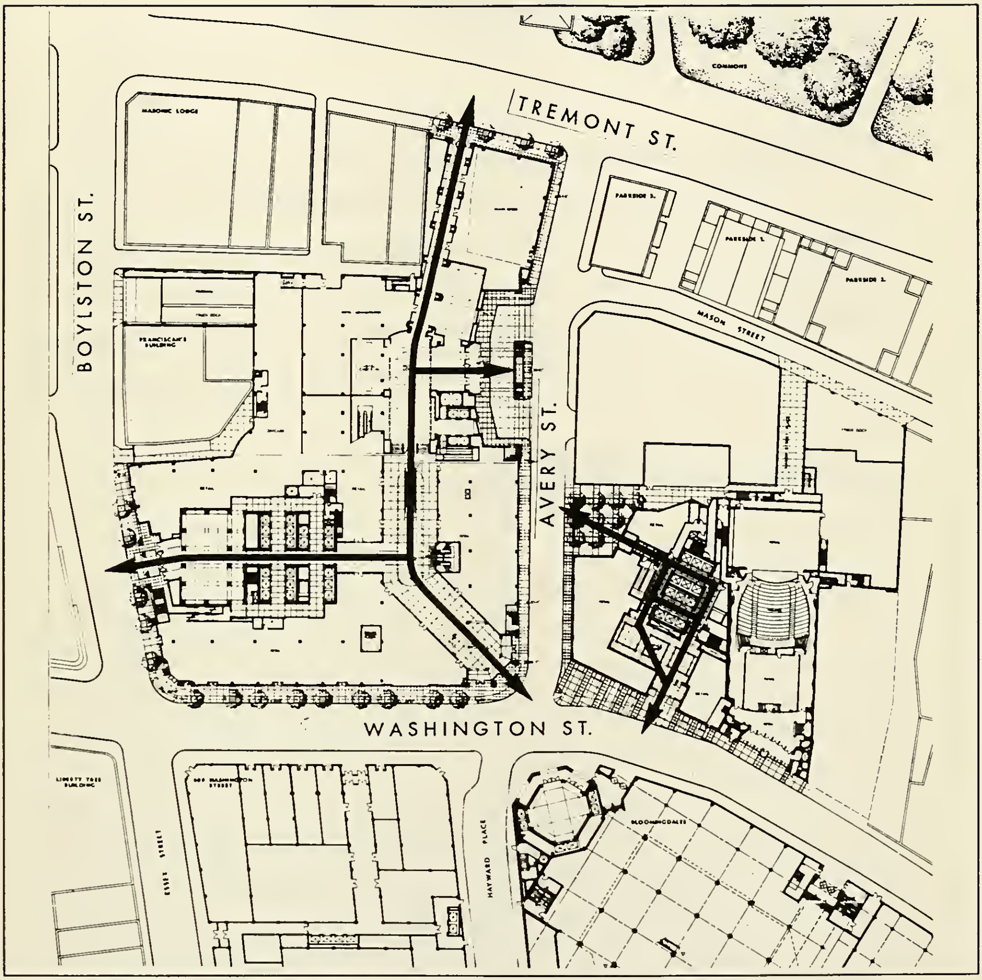

Figure 8. Pedestrian Circulation

LETTER 6

[illegible]
APR 2 1990
MEPA

LATE COMMENT

[illegible]

Ms. McCabe,

Attached find a letter reflecting technical comments related to the Commonwealth Center FEIR prepared by WalkBoston. We have previously written to you with comments on other projects under the title "The Boston Area Walking Alliance". At our February 1990 executive committee meeting we formally changed our name to WalkBoston.

Sorin Garber
WalkBoston Executive Committee

Walk **Boston**

156 Milk Street
Boston, MA 02109
(617) 451-1570

March 29, 1990

Janet McCabe
MEPA Unit
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

Re: Comments on the Commonwealth Center FEIR (EOEA #7113)

Dear Ms. McCabe:

As a member of the Executive Committee of WalkBoston, I have reviewed the Commonwealth Center FEIR. Our interest in studying documents such as this is to ensure that issues affecting the walking environment are addressed in a responsible manner.

We feel that the Boston Redevelopment Authority (BRA), Boston Transportation Department (BTD), Massachusetts Bay Transportation Authority (MBTA), and the Executive Office of Environmental Affairs should be commended for their responsible consideration of pedestrian issues with respect to their input on this project. It is clear that these agencies understand the value in improving the walking environment, and the need to create a more balanced transportation network. We also feel that the developer of this project has responded to your pedestrian related comments in a responsible manner (e.g., performing a pedestrian origin-destination study, pedestrian capacity analysis, providing pedestrian connections to the Orange Line and the Green Line, etc.).

In addition to the comments already made on the effect of the project on pedestrians, we have suggestions regarding the methodology used in evaluating the project's impact on pedestrian conditions, the calculation of person trip generation and distribution, the effect of project curb cuts on pedestrian circulation and safety, and the additional capacity gained by sidewalk widenings. These comments are presented in greater detail below:

1. 1. The analyses of pedestrian conditions should use the 1985 Highway Capacity Manual materials in place of the

Pushkarev and Zupan method (from Urban Space for Pedestrians). The Highway Capacity Manual analyses evolved from a series of methodologies beginning with Pushkarev and Zupan in 1975, and enhanced by the TRB Circular No. 212 materials, and additional work by Fruin and Benz on time and space relationships. The revised manual gives us a uniform method, a more accurate portrayal of conditions, and a separate evaluation of conditions on midblock sidewalk locations, crosswalks and corner reservoirs.

This is particularly relevant to this project where the FEIR states that sidewalk and corner congestion could be mitigated by widening crosswalks. In fact, comments from the BTD indicate a concern about "dwell space", or the amount of space available to pedestrians that are waiting for the light to turn green. One could conclude from this that while waiting to cross an intersection pedestrians would overflow from corners. Moreover, the Pushkarev and Zupan method does not appreciate the distinction between normal flow and platoon flow within the peak hour while the revised Highway Capacity Manual does.

2. 2. The total number of person trips generated by the project is about half of what could be calculated using generation rates for the office and retail/restaurant uses found in Pushkarev and Zupan. Using Table 21, the 14,456 person trips generated by the office use (i.e., which is arrived at by factoring in the vehicle occupancy rate of 1.59 to convert auto trips back into person trips by auto) results in a trip generation rate of 10.25 person trips/1,000 gsf. This is much less than the rates determined for urban office buildings in Table 2.2 of Pushkarev and Zupan which range from 13.2 person trips/1,000 gsf to 17.3 person trips/1,000 gsf. In New York City, governmental analysts require that a factor of 18 person trips/1,000 gsf be utilized for office buildings in the central business district.

Similarly, Pushkarev and Zupan established factors of 252 person trips/1,000 gsf of Department Store space and 173 person trips/1,000 gsf of restaurant space (see Tables 2.4 and 2.3, respectively), while the resulting trip generation rate for the combined retail/restaurant space in this project is 48.67 person trips/1,000 gsf (i.e., 99,400 gsf/4,838 person trips).

3. In contrast to these potential undercountings, a comparison of temporal distribution rates between the project and Pushkarev and Zupan indicates that the FEIR assumes a very high rate of AM and PM peak hour trips. The FEIR uses rates of 18.4 percent in the AM peak hour and 16.9 percent in the PM peak hour. The Pushkarev and Zupan documentation indicates that 11.8 percent of all daily person trips enter and depart office buildings between 8-9 AM and 13.7 percent of all daily person trips enter and depart office buildings between 5-6 PM. It is critical to our understanding of the impact of the project on pedestrian conditions that the proper trip generation and temporal distribution rates are used.

4. 3. The FEIR does not include any discussion of the impact to pedestrian movements presented by the curb cuts to the parking garage, truck loading docks and the hotel driveway. At peak congestion periods, traffic into and out of these curb cuts could result in both a constraint to pedestrian flow and a potential safety conflict. Since the FEIR already identifies pedestrian circulation routes (see Figure 13) passing through all three curb cuts, it is essential that site specific analyses be completed.

5. 4. It is unclear from the trip distribution analyses whether persons arriving at and departing from the project by auto would utilize the pedestrian pathways analyzed. This should be more clearly presented.

6. 5. Finally, the FEIR should state what effect the sidewalk widenings would have on pedestrian level of service.

The Executive Committee of WalkBoston concurs with comments
made by the BTD and the MBTA regarding: the need to analyze
7. the effect of signal timing changes on pedestrian conditions
in addition to sidewalk widenings; the possible requirement
8. for additional stairway width at the new entrance to the
Orange Line/Chinatown station; and, the need for plans to be
9. drawn up which do not preclude a future pedestrian connection
from the project to the Green Line/Boylston Street station.

In summary, we feel that the attention given to the impact of the Commonwealth Center project on the pedestrian environment by both the official review agencies and the developer's consultants has been both professional and responsible. We do, however, urge you to consider our comments so that the project's supplemental FEIR discloses even more potential impacts and more accurate results.

As you know, Boston enjoys one of the highest rates of walking as a means of travel to work in the nation. It is important that we both preserve and enhance a walking environment that is convenient and safe.

If you would like to discuss our comments in greater detail please contact either me or Dorothea Haas at (617) 451-9450.

Sincerely,

Sorin Garber

Sorin Garber

LETTER 6 - WALK BOSTON

Comment #1:

Topic: Pedestrian Operations Analyses Techniques.

Comment: *The analyses of pedestrian conditions should use the 1985 Highway Capacity Manual materials in place of the Pushkarev and Zupan method (from Urban Space for Pedestrians).*

Response:

The pedestrian operations analyses conducted for the project's DPIR/DEIR and FPIR/FEIR were conducted according to the requirement of the Boston Transportation Department that procedures provided in Urban Space for Pedestrians (Pushkarev and Zupan, 1975) be employed therein. That requirement was stipulated in BTD's "*Additions to Scope of Access Plan for Commonwealth Center*", dated May 7, 1988. The procedures recommended by the Institute of Transportation in the Highway Capacity Manual (1985) are, in part based upon the pioneering studies of Pushkarev and Zupan in the field of pedestrian movement, and the recommended methods of determining pedestrian flow rates and resulting service levels are fundamentally the same within the two documents. A major concern of the Pushkarev and Zupan documentation is the opportunity for pedestrian flow to reach significant enough proportions that overflow occurs from the reservoir space onto the street pavement, as a function of available crosswalk width and pedestrian green time. The intention of the additional pedestrian operation analyses within this SFEIR has been to determine at what crosswalk width, in the case of the Tremont Street/Boylston Street intersection, adequate pedestrian flow may be achieved, without the opportunity for overflow onto the pavement surface, and without jeopardizing vehicular movement Levels of Service.

Pushkarev and Zupan devote considerable space in their book to the effect of pedestrian platooning on service levels, and make note that platooning in the vicinity of subway stations and bus stops is of significant concern, particularly during morning and evening peak hour flows. The effect of platooning is compounded at crosswalks of signalized intersections; the signals themselves tend to create platoons in crosswalk flow. The formation of pedestrian platoons at either end of the crosswalk involves pedestrian selection of standing or reservoir space which is normally between three and five square feet in the vicinity of the curb, and increasing to seven square feet at distances further from the curb. As a result of the above variation in density among standees in the reservoir space, Pushkarev and Zupan recommend an average of five square feet per standee; a standard used throughout this project's pedestrian analyses. In this fashion the potential effect of platooning in pedestrian flow has been acknowledged herein.

Comment #2:

Topic: Pedestrian Generation Rates.

Comment: *The total number of person trips generated by the project is about half of what could be calculated using generation rates for the office and retail/restaurant uses found in Pushkarev and Zupan.*

Response:

The determination of potential pedestrian trips within the study area was undertaken via application of person trip rates and modal splits noted within the BRA's Midtown Cultural District Plan (March, 1988) to specific pending developments as also noted within that study. Consideration in estimating peak hour pedestrian volumes was given to foot traffic internally generated by hotels and other land uses, foot traffic between transit stops and development sites, and foot traffic between off-site parking garages and development sites. The pedestrian volume estimation, conservatively, assumed that all pedestrian trips were in fact new to the study area, despite the understanding that a portion of the pedestrian trips would be diverted trips which would have been in the study area anyway.

The pedestrian trip generation rates recommended within Pushkarev and Zupan(1975) result from pedestrian counts conducted in Midtown Manhattan (primarily) during the early 1970's, and are in fact expressed in terms of pedestrian entering and exiting movements. All pedestrian generation rates provided, then, must be divided by two to achieve the appropriate applicable rate per use.

Caution is provided in Pushkarev and Zupan that the measured pedestrian volumes at cited locations are not representative and instead display pedestrian activity at the specific establishments listed, which were selected without employing sampling methods. Caution is also offered that the sample size of counted locations was very small in most cases. For these reasons alternative methods of estimating pedestrian volumes which would be more specific to modal splits evidenced in downtown Boston in the late 1980's were pursued in the environmental impact reports.

Comment #3:

Topic: Pedestrian Generation Rates.

Comment: *A comparison of temporal distribution rates between the project and Pushkarev and Zupan indicates that the FPIR/FEIR assumes a very high rate of AM and PM peak hour trips.*

Response:

As noted above in the response to Comment #2 of this letter, all peak hour pedestrian volume estimates are conservative, and intended to be representative of modal split estimates associated with pending development in Downtown Boston, as enumerated by the BRA within their Midtown Cultural District Study. The Pushkarev and Zupan peak hour pedestrian volume rates are presumably too specific to the locations at which volume data was collected in the early 1970's, and thus are not directly transferable to the study area except in a comparative academic exercise.

Comment #4:

Topic: Pedestrian Operations at Project Curb Cuts

Comment: *The FPIR/FEIR does not include any discussion of the impact to pedestrian movements presented by the curb cuts to the parking garage, truck loading docks and the hotel driveway.*

Response:

Pedestrian operations analyses in the study area have been limited to the most critical components of the pedestrian network, those of the crosswalks at signalized intersections. Both ITE and Pushkarev and Zupan note that pedestrian operations at these locations are more complex than at mid-block sidewalk locations. The concentrations of pedestrian storage and subsequent movement within platoons represents the critical link in the pedestrian network. With regard to pedestrian operations at the project's curb cuts to the garage and hotel entrance, pedestrian movements on the sidewalk at these curb cuts would constitute the "right-of-way", and vehicular movements in and out of the curb cuts would be contingent upon gaps in the pedestrian flow, rather than the vice versa. Therefore, the impacts upon pedestrian movement of these curb cuts is expected to be insignificant.

Comment #5:

Topic: Pedestrian Pathway Analysis

Comment: *It is unclear from the trip distribution analyses whether persons arriving at and departing from the project by auto would utilize the pedestrian pathways analyzed.*

Response:

As noted in the response to Comment #2 of this letter, the estimation of pedestrian trips, and more significantly their assignment to study area sidewalks and crosswalks has attempted to quantify pedestrian movements between development sites and existing and proposed parking garages and other parking facilities in the study area. With regard to project-specific pedestrian movements resulting from parking maneuvers within the on-site garage, where those movements are projected to be destinations exterior to the Parcel 30 component of the project during peak hours, every effort has been made to include those movements within the noted pedestrian volumes in the vicinity of the site at the 1996 Build level of capacity.

Comment #6:

Topic: Sidewalk Widenings

Comment: *The FPIR/FEIR should state what effort the sidewalk widenings would have on pedestrian level of service.*

Response:

Reference is made within the FPIR/FEIR (p. 127) that a plan for streetscape improvements within the Midtown Cultural District is presently being formulated by the BRA, BTD, and City of Boston Public Works Department. In this context, the document noted proposed sidewalk widenings in the vicinity of the site to both allow for implementation of streetscape improvements and provision for adequate view corridors and continual road surface widths along Washington Street and along Avery Street. The specific sidewalk widenings proposed entail an additional 0.5 to 2.0 feet on Avery Street sidewalks to allow for a continuous 24 foot wide road surface between Washington Street and Tremont Street, and an additional 3.0 feet (on average) on the western edge of Washington Street at the site to maintain a continuous road surface width of 30 feet at the Parcel 30 block and 18 feet at the Keith Block. In that the additional sidewalk width will, in part, allow for implementation of an as yet unspecified streetscape improvement plan of trees, plants, and other street furniture, it is projected that the impact upon pedestrian capacities on these sidewalk widenings will be insignificant.

Comment #7:

Topic: Signal Timing Adjustments and Crosswalk Widenings

Comment: The effect of signal timing changes on pedestrian conditions should be analyzed.

Response:

The effect of an alternation to the existing signal timing and phasing at the Tremont Street/Boylston Street intersection has been fully analyzed herein to determine the timings which would be necessary to allow for pedestrian crosswalk service levels at no worse than "impeded" while maintaining vehicular levels of service which are at no worse than "D" during either peak hour. A full description of the results of these analyses is provided within the responses to Comment #2 of the EOEA Certificate (Letter 1), and Comment #2 of the Boston Transportation Department (Letter 4).

Comment #8:

Topic: Stairway Width at New Entrance to Chinatown Station

Comment: Plans need to be prepared which do not preclude a future pedestrian connection from the project to the Green Line Boylston Street Station.

Response:

See response to Comment #5 of the MBTA letter (Letter 3).

Comment #9:

Topic: Future Pedestrian Connection to Boylston Street Station

Comment: Plans need to be prepared which do not preclude a future pedestrian connection from the project to the Green Line Boylston Street Station.

Response:

See response to Comment #6 of the MBTA letter (Letter 3).

JW

**Boston Water and
Sewer Commission**

425 Summer Street
Boston, MA 02210-1700
617-330-9400
Fax 617-330-5167

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FEB 26 1990
MEPA

February 23, 1990

Secretary John P. DeVillars
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Floor
Boston, Massachusetts 02202

Attn: MEPA Unit

Re: Commonwealth Center FPIR/FEIR
EOEA 7113

Dear Secretary DeVillars:

The Commission has reviewed the Final Project and Environmental Impact Report (FP/FEIR) submitted for Commonwealth Center.

The existing sites consist of a mix of retail, office and residential buildings and some vacant land. The project proposes to create a combination of office, retail, hotel and day care spaces on two sites: Parcel 30 and the Keith Block. The total project area has been scaled down from 1.94 million square feet (S.F.) to 1.84 million S.F. since the Draft Project/Environmental Impact Report was submitted. Space has been reduced for each of the uses except the hotel where approximately 30,000 S.F. of office space has been converted to hotel use.

The appropriateness of separation needs to be evaluated in view of the Massachusetts Water Resources Authority's (MWRA) combined sewer overflow (CSO) planning project. Two alternatives are proposed in the recently released MWRA Draft CSO Facilities Plan which are significant for this determination. One alternative will store combined flows from Commonwealth Center in consolidation conduits and deep rock tunnels during a storm event and then transport them to the Deer Island plant for treatment. The other alternative does not include a proposal for controlling combined flows from this area. After the Commission has completed its review of the MWRA's Draft CSO Facilities Plan, it will decide whether the proponent may discharge to the existing combined sewer system or will be required to install separate stormwater and sanitary sewers.

The permanent discharge of groundwater collected in the underslab drainage system was not addressed in the Draft Project/ Environmental Impact Report. The proponent must evaluate alternatives to discharging groundwater to the sewers on a permanent basis. The evaluation must quantify the amount of groundwater to be discharged and the amount to be reused or recharged to the water table. 1.

Any relocation or abandonments of existing water, sewer or drain lines as well as the construction of proposed water, sewer or drain lines will be reviewed during site plan review.

Thank you for the opportunity to comment on this project.

Yours truly,

John Sullivan

John P. Sullivan, Jr., P.E.
Chief Engineer

JPS/PK/mo

cc: Alexander C. Twining-Commonwealth Center Limited Partnership
William Whitney-BRA
Stephan Shea-BWSC

LETTER 7 - CITY OF BOSTON WATER AND SEWER COMMISSION (BWSC)

Topic: *Permanent Groundwater Discharge*

Comment: *The Proponent must evaluate alternatives to discharging groundwater to the sewers on a permanent basis. The evaluation must quantify the amount of groundwater to be discharged and the amount to be reused or recharged to the water table.*

Response:

Hydrostatic Design

The Proponent has evaluated two alternatives to discharging groundwater to the sewers. The analysis and a description of two feasible alternatives is detailed below.

The below-grade parking levels for the proposed development will be approximately 45 ft. below the design groundwater level, therefore the design of the below grade structure will consider the effects of hydrostatic pressures.

Two options for hydrostatic design are 1) to design floor slabs to resist the full hydrostatic pressure, or 2) to design a fully or partially relieved floor slab with a permanent underdrainage system.

For the *first option*, there must be sufficient dead weight of the structure to resist uplift pressures. In order to provide sufficient resistance in the low rise portion of the building, a system of hold down anchors drilled and grouted into the glacial till or rock, would be required. A relatively thick reinforced concrete floor slab would be required at the lowest level to span between anchor points.

Based upon configuration of the building and the depth of the basement levels it is concluded that the more feasible system is to provide permanent hydrostatic relief (second option) below the lowest level floor slab which would consist of the following components:

1. Permanent Seepage Cutoff - A concrete diaphragm wall will be extended into the relatively impervious glacial till soils to limit the quantity of seepage.

2. Underslab Drainage System - The underdrainage system will consist of a crushed stone drainage blanket and perforated or porous wall pipe. Pipes will collect the seepage and discharge it to collection sump pits beneath the lowest level floor.

Based on observed seepage conditions at Rowes Wharf (5 levels deep), 75 State Street (6 levels) and 125 Summer Street (5 levels) and on-site subsurface conditions, a flow rate of 5 to 10 gallons per minute is anticipated.

Groundwater Discharge

The Boston Water and Sewer Commission requires evaluation of alternatives to discharge of groundwater into City storm drains on a permanent basis. Accordingly, three options that are being considered are as follows:

1. *Utilize the pumped water in some way within the project for non-potable water uses.*

   Based on discussions with the mechanical consultant, Cosentini Associates, it is possible to use collected groundwater as a source of chilled water for the air conditioning system. Groundwater would be pumped to the cooling tower and stored for use. This would have the advantage of mitigating MWRA concerns for the use of the water cooled system. Other uses which are feasible include using the collected water for toilet flushing. The water would need to be filtered and stored on-site in a tank.

2. *Discharge water into the ground by pumping to recharge wells located at the perimeter of the site.* Collected groundwater would be pumped to the top of the well near the ground surface and percolate into previous strata below the surficial fill stratum.

   In order to determine the feasibility and provide design details for the recharge option, full scale permeability testing conducted in test well installations would be required. If feasible, the recharge system would probably consist of a large number of small injection wells installed at the perimeter of the site or installed horizontally through the concrete diaphragm wall into the pervious substrata.

   Since the groundwater would be returning to the natural soil strata from which it originated, little long term impact is anticipated. The recharge system would help to maintain normal groundwater levels in the adjacent areas.

   The success of the recharge system depends greatly on the ability of the concrete diaphragm wall to provide an effective seepage cutoff. If flow rates are higher than anticipated after basement construction is completed, it would be feasible to install an impermeable grout curtain below the bottom of the concrete diaphragm wall to cut off a greater quantity of flow and reduce the number of recharge wells required to adequately discharge the collected water.

3. *Design the substructure to resist full hydrostatic pressures and eliminate the need for pumping, (i.e. no pump option).*

   As a last resort, if the first two options were not feasible, the project would request that groundwater be discharged into the storm drain system. Although designing the substructure to resist hydrostatic pressure is technically feasible, it is considered cost prohibitive due to the large low-rise area which would require hold-down support.

   Currently the preferred option is to use the water as a resource within the building, as it is probably more cost effective and technically feasible than the recharge option. Therefore, a system for using the water in the cooling system will be evaluated during design of the project. If necessary, the recharge option will also be evaluated.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129

Telephone:
(617) 242-6000

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d of Directors
P. DeVillars, Chairman
J. Carroll
rt J. Ciolek
m A. Darity
ne M. Downey
ny V. Fletcher
es Lyons
h A. MacRitchie
el G. Mygatt
as E. Reilly, Jr.
r J. Ryan, Jr.

tive Director
. Levy

February 26, 1990

John P. DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attn: MEPA Unit

Re: EOEA No. 7113 - Commonwealth Center FEIR, Boston

Dear Secretary DeVillars:

Concerning the above-referenced Final Environmental Impact Report,(FEIR), we submit the following comments:

The proposed project will increase wastewater flows to the MWRA Sewer System, parts of which currently lack sufficient capacity to convey wastewater flows without chronic surcharging and overflowing, and to the Deer Island Wastewater Treatment Facility, which currently lacks sufficient capacity to treat wastewater flows during wet weather.

While the additional flow from this project alone would not be expected to significantly increase the frequency of overflows and backups, the development of several projects would increase wastewater flow enough to have an effect on the MWRA system.

The MWRA is in the process of constructing a new wastewater treatment plant which will be fixed in size and limited in capacity. Due to excessive infiltration/inflow in the sewer system, it appears that there will be less than 20 mgd annual flow capacity remaining for future growth. Therefore, the MWRA is concerned about new development and is currently in the process of reducing infiltration/inflow and encouraging communities to do so as well.

While it is not our intent to limit development and economic growth, it is in the best interests of the MWRA to encourage proponents of new projects to minimize wastewater flows and to incorporate mitigation measures wherever possible.

As strict adherence to the Massachusetts Plumbing Code is a requirement and not a mitigation measure, the MWRA suggests the following additional measures in order to minimize water use and wastewater flow:

Heating and Cooling

1. The building heating and air conditioning should be air cooled rather than water cooled. If water cooling is necessary the system should be closed loop.

Sanitary Use

2. Restrooms should be equipped with water saving fixtures such as faucet aerators that use 2.0 gallons per minute or less and spring loaded or timer valves.

Landscaping

3. Landscaping should emphasize the use of water efficient plantings, and minimize turf areas.

Kitchen/Cafeteria Areas

4. Kitchen and cafeteria areas should incorporate water saving techniques and equipment.

Laundry

5. Water efficient equipment should be used.

We are pleased to note that the proponent is conducting a combined sewer separation analysis in coordination with the BW&SC.Such efforts can contribute to the reduction of inflow in the sewer system. We would be interested in knowing the results of that analysis.

6. On page 186, the proponent indicates that a new 12" sanitary sewer and new 10" and 12" storm sewers will connect to the existing 12" combined sewer. Could this proposal cause problems during wet weather?

7. Finally, the project includes a parking facility, which must be provided with an MWRA approved gas/oil separator.

We appreciate the opportunity to comment. Should you have any questions, please do not hesitate to call me at 242-0230, ext. 4804.

Very truly yours,

Katina N. Belezos, Project Engineer
Planning Program
Wastewater Engineering

KNB/gmc:KB7113

C.C: Libby Blank, BW+SC

LETTER 8 - MASSACHUSETTS WATER RESOURCE AUTHORITY (MWRA)

Comment #1:

Topic: *Heating and Cooling*

Comment: *The building heating and air conditioning should be air cooled rather than water cooled. If water cooling is necessary the system should be closed loop.*

Response:

The Project Proponent will investigate the use and application of alternative heat rejection sources such as air cooled condensers, closed circuit towers and evaporative condensers in lieu of open water towers. As part of this investigation the Project Proponent will review the overall environmental impact of air cooling vs. water cooling on the basis of water usage and the total energy consumption. Water usage will be compared both within the building and at the power plant which supplies the energy for an air cooled system. The Project Proponent is also investigating utilization of groundwater for the cooling system.

Comment #2:

Topic: *Sanitary Use*

Comment: *Restrooms should be equipped with water saving fixtures such as faucet aerators that use 2.0 gallons per minute or less and spring loaded or timer valves.*

Response:

The Project Proponent will equip restrooms with water saving features as per the most stringent guideline available.

Comment #3:

Topic: *Landscaping*

Comment: *Landscaping should emphasize the use of water efficient plantings, and minimize turf areas.*

Response:

The Project Proponent has planned the landscaping to be similar to the surrounding urban context which includes primarily paved surfaces with minimal turf areas and minimal plantings. Water efficient plantings which are primarily dependent upon rain water are planned.

Comments #4 & #5:

Topic: *Kitchen, Cafeteria and Laundry Areas*

Comment: *Kitchen and cafeteria areas should incorporate water saving techniques and equipment. Water efficient equipment should be used for laundry.*

Response:

The Project Proponent will incorporate the latest techniques available for the conservation of water in the kitchen, cafeteria and laundry areas.

Comment #6:

Topic: *Infrastructure*

Comment: *The Proponent must investigate whether the connection of the new proposed 12" sanitary sewer and new 10" and 12" storm sewers to the existing 12" combined sewer will cause problems during wet weather.*

Response:

Currently there are no known problems with the 12" combined sewer in Avery Street during wet weather flows. While the Proposed Project will cause an increase in the flow to this line under the preliminary routing of the sanitary and storm lines the moderate increase is not anticipated to exacerbate the situation.

Several buildings on Parcel 30 currently contribute flow to the 12" combined sewer in Avery Street. This flow will be eliminated as the Proposed Project requires demolition of these structures. New flows from the Parcel 30 portion of the Proposed Project will be conveyed in separate storm and sanitary lines to an existing combined sewer in Boylston Street. Increased sanitary flows from the Keith Block portion of the site are the only proposed additions to the 12" combined sewer in Avery Street. The storm runoff from this area is already tributary to the 12" line. All flows from the Proposed Project are to be conveyed away from the area by the 28" x 42" combined sewer in Washington Street which has been shown to have adequate capacity in the FPIR/FEIR.

The tentative connection points were selected based upon discussions with the BWSC. The proposed sanitary and storm sewer lines have been sized based upon conservative estimated fixture counts. As the project moves forward into more detailed design the actual line sizes and flows can be more accurately estimated. This process will most likely see a down sizing of all lines. Also the site plan review process with the BWSC will further clarify whether the proposed connection points remain feasible. Several options do exist to those outlined in the FPIR/FEIR including:

1. Connect to existing 12" combined sewer as proposed with separated lines.
2. Replace existing combined sewer with larger size line to handle increased flow and install lines from project as proposed.
3. Install separate sanitary sewer line to serve the north portion of Proposed Project (Keith Block) and connect to 28" x 42" combined sanitary sewer in Washington Street. Connect storm sewer to 12" line in Avery Street.
4. Relocate the proposed connection points to coincide with frontage along Washington Street and connect separate storm and sanitary lines to 28" x 42" combined sewer in Washington Street.

Comment #7:

Topic: *Parking Gas/Oil Separator*

Comment: *Parking facility must be provided with an MWRA approved gas/oil separator.*

Response:

The Project Proponent will provide the parking facility with an MWRA approved gas/oil separator.

LETTER 9

TREMONT
ON-THE-COMMON

CONDOMINIUM • 151 TREMONT STREET • BOSTON, MASSACHUSETTS 02111 • 423-7000

JW

RECEIVED
FEB 26 1990
MEPA

February 21, 1990

Secretary John DeVillars
Executive Office of Environmental Affairs
Office of the Secretary, 20th Floor
100 Cambridge Street
Boston, Massachusetts -02202-

RE: Commonwealth Center
EOEA 7113

Dear Secretary DeVillars:

The Trustees of Tremont-on-the-Common have reviewed the Final Project and Environmental Impact Report for Commonwealth Center.

As we have written to you previously, we are committed to improvement in the City and in our neighborhood and thus do not oppose this development; however, we remain concerned with the minimal mitigation measures taken to reduce shadows on the Common and on our building.

The shadows on Tremont-on-the-Common will adversely affect units on the rear of our building and will render the swimming pool area uncomfortable or useless for some hours of each day. In addition, this condition will adversely affect the value of the units on this side.

We appreciate your attention to this matter.

Sincerely,

John Trefethen

John Trefethen,
Chairman
Board of Trustees
Tremont-on-the-Common
Condominium Trust

LETTER 9 - THE TRUSTEES OF TREMONT-ON-THE COMMON (TOC)

Comment #1:

Topic: *Shadow Impact*

Comment: *The shadows on Tremont-on-the-Common (TOC) will adversely affect units on the rear of our building and will render the swimming pool area uncomfortable or useless for some hours of each day. In addition, this condition will adversely affect the value of the units on this side.*

Response:

As shown in the shadow analysis in the DPIR/DEIR (pages 176, 178, 180), the Commonwealth Center project does not cast any new shadows on TOC on June 21st @ 9:00 a.m., 12:00 noon and 3:00 p.m. The swimming pool is located on the roof of the parking garage above the 5th floor which is located to the east of the 27 story building and is shaded for most of the summer afternoons by the TOC building itself. During most summer mornings, the pool will be shaded by the Opera House directly across Mason Street. The Proponent altered the design of the Keith Block Tower to reduce the width of the tower and therefore the width of the shadow and to move the tower location away from TOC.

The Project Proponent believes that the Commonwealth Center project will increase the value of the TOC units as it will be a substantial improvement to the existing context. Furthermore, the pedestrian experience and new activity with a hotel, shops, restaurants, office tenants and cultural facilities will make the entire neighborhood a more enjoyable and secure place to live. While the distant view toward South Boston and Chinatown will be reduced by Commonwealth Center, the existing close-up view across Mason Street of parking lots and boarded up buildings will be completely changed by a new high quality masonry and glass office building.

MA/atm/r-sfeir

APPENDIX A

Transportation Access Plan Agreement

TRANSPORTATION ACCESS PLAN AGREEMENT

BETWEEN

THE CITY OF BOSTON TRANSPORTATION DEPARTMENT

AND

COMMONWEALTH CENTER LIMITED PARTNERSHIP

This Agreement is entered into this ____ day of _______, 1990, by and between the CITY OF BOSTON TRANSPORTATION DEPARTMENT (hereinafter referred to as "BTD") and COMMONWEALTH CENTER LIMITED PARTNERSHIP, a joint venture of F. D. Rich Company of Boston, Inc., and A. W. Perry, Inc., with a principal place of business at 99 Summer Street, Boston, Massachusetts 02110-1200 (hereinafter referred to as "Developer").

WITNESSETH THAT:

WHEREAS, Developer proposes to construct a building located on the existing Parcel 30 block near the corner of Boylston and Washington Streets, and containing 830,000 square feet of office space and 91,000 square feet of retail and restaurant space; a building on the Parcel 30 block containing a hotel of 419 rooms; a building on the Keith block at the corner of Washington and Avery Streets containing 580,000 square feet of office space and 8,400 square feet of retail space; an 8,000 square foot child care center; below grade parking for approximately 1,000 cars; and to convert the existing Paramount Theater into a 499-seat dance theater and a 199-seat studio theater; and

WHEREAS, Transportation Access Plans included in Draft and Final Environmental Impact Reports have been submitted on behalf of the transportation impacts of the Project and which have been attached hereto as Exhibit A; and

WHEREAS, Developer has identified in the Transportation Access Plans potential traffic and parking impacts from the construction and has further identified certain measures to mitigate such impacts, such measures to be implemented through a construction management plan and a permanent access plan; and

WHEREAS, the BTD and the Developer desire to mitigate traffic and parking impacts from the construction and operation of the Project;

NOW, THEREFORE, in consideration of the mutual promises herein contained, the sufficiency of which is hereby acknowledged, the parties do hereto mutually agree as follows:

SECTION 1. Definitions

(a) "Agreement" shall mean this Transportation Access Plan Agreement.

(b) "BTD" shall mean the Transportation Department of the City of Boston with offices at One City Hall Plaza, Room 721, Boston, Massachusetts 02201, its successors and assigns.

(c) "Certificate of Occupancy" shall mean a certificate of occupancy issued by the City of Boston Inspectional Services Department ("ISD") for the Project.

(d) "Project" shall mean a building located on the existing Parcel 30 block near the corner of Boylston and Washington Streets, and containing 830,000 square feet of office space and 91,000 square feet of retail and restaurant space; a building on the Parcel 30 block containing a hotel of 419 rooms; a building on the Keith block at the corner of Washington and Avery Streets containing 580,000 square feet of office space and 8,400 square feet of retail space; an 8,000 square foot child care center; below grade parking for approximately 1,000 cars; and to convert the existing Paramount Theater into a 499-seat dance theater and a 199-seat studio theater.

(e) "Site" shall mean the approximately 143,000 square foot parcel located on two city blocks bounded by Tremont, Boylston, Washington streets and the Paramount and bisected by Avery Street, as more fully set forth in Exhibit A to this Agreement.

(f) "Developer" shall mean COMMONWEALTH CENTER LIMITED PARTNERSHIP, a joint venture of F. D. Rich Company of Boston, Inc., and A. W. Perry, Inc., with a principal place of business at 99 Summer Street, Boston, Massachusetts 02110-1200.

(g) "Effective Date" shall mean the date of issuance by ISD of the first certificate of occupancy or partial certificate of occupancy authorizing occupancy of any portion of the Project.

(h) "Term of this Agreement" shall mean thirty (30) years from the Effective Date.

(i) "Transportation Access Plan" shall mean the Transportation Access Plans included in Draft and Final Environmental Impact Reports submitted on behalf of the Developer to the State of Massachusetts Executive Office of Environmental Affairs and designated as EOEA 7113, prepared for the Developer by Sasaki

Associates, as such Plan may from time to time be amended, a copy of which is attached as Exhibit A and incorporated herein by reference.

(j) "Carpool" shall mean a private vehicle carrying three (3) or more, but less than eight (8) passengers to and from the workplace.

(k) "Vanpool" shall mean a private vehicle carrying eight (8) or more passengers to and from the workplace.

(l) "Weekday" shall mean Monday through Friday, inclusive, excluding holiday periods.

(m) "Neighbors" shall mean St. Francis House, ABCD, and 80 Mason Street Housing.

SECTION 2. Measures to Minimize Traffic Generation

In order to mitigate the potential impacts of the Project and to ensure that traffic generated by the Project upon the local or regional roadway systems or the residential neighborhoods of Chinatown or Bay Village, the Developer will institute the Commuter Mobility Program, described herein.

(a) The Goals of the Commuter Mobility Program are:

(1) to maximize the use of mass transit and ridesharing by persons visiting or working at the Site;

(2) to make available to all workers in the area, by means of participation with other Midtown Cultural District property owners, businesses and institutions in a Transportation Management Association, improved access to mass transit and ridesharing services; and

(3) to foster through cooperative efforts with local and state government improvements in transportation facilities, programs and services; including programs which encourage and facilitate spreading of the peak hour use of mass transit.

(b) The specific objectives ("Objectives") of the Commuter Mobility Program shall be the achievement of:

(1) a 70% rate of transit usage among persons commuting to work at the Project and

(2) an average of 1.9 persons in each automobile used for commuting to and from the Project.

As described in Section 10 hereof, the Developer shall submit annual monitoring reports detailing the transportation impacts of the Project. In order to evaluate the progress toward attainment of the Objectives, the Developer will include in each annual monitoring report an analysis showing the levels of transit usage and vehicle occupancy rate of commuters to the Project. The annual monitoring report will also include a comparison of the transit usage and vehicle occupancy rates with the Objectives and an assessment of progress toward the Objectives. If the Objectives have not been achieved, the annual monitoring report shall include proposed refinements and additions to the Commuter Mobility Program which will ensure the achievement of the Objectives. Annual monitoring reports shall be submitted for the review and approval of the BTD, which shall consult with the Developer with respect to the development of mutually agreeable improvements to the Commuter Mobility Program, as necessary to achieve the Objectives by use of reasonable and economical means consistent with commuter mobility programs for comparable Projects; provided, however, that no such improvements shall require the expenditure by the Developer of money for road or transit facilities or improvements, or any capital expenditure.

(a) **Transportation Coordinator.** Developer shall designate a transportation coordinator (the "Transportation Coordinator") who shall cooperate with the BTD in the execution and monitoring of the obligations set forth in this Agreement. The Transportation Coordinator shall further implement the Commuter Mobility Program at the Project, which shall include the following elements and activities:

(1) coordinate all ridesharing activities as described in Section 3 below;

(2) promote transportation options through periodic newsletter, special events, publicity, and tenant relations;

(3) manage on-site MBTA pass sales;

(4) encourage office tenants to implement alternative work schedules to spread peak-hour travel;

(5) monitor efforts of the commuter Mobility Program and submit annual reports to the BTD.

(b) **Ridesharing Program.** The Developer shall promote ridesharing, in the form of carpools and vanpools, by persons employed both in the Project and in the surrounding area. To that end, the Developer shall:

(1) provide computerized carpool/vanpool matching programs, such as Ridesource. Until such time as a Transportation Management Association is established the Developer will provide for such program on site, after which time it may be located at shared location;

(2) participate in joint ridesharing programs with tenants, organizations, and companies both within the Project and in the Midtown/Cultural District;

(3) no less than once every six months, provide promotional materials on ridesharing to employees and tenants of the Project;

(4) no less than once every six months, include promotional information on ridesharing in a newsletter for tenants of the Project and their employees, which will disseminate information and aid in matching potential ridesharers;

(5) provide preferential locations for parking of vehicles used in carpooling or vanpooling;

(6) provide a discount of 50% or a discount comparable to the rates required in Transportation Access Plan Agreements for competitive Projects developed after the date of this document, from prevailing parking rates in the Project for up to twenty five (25) vanpools which are more than fifty percent (50%) occupied and of which no fewer than four occupants are employed in the Project;

(7) no less than once every year, sponsor a "Transportation Day" at which transit alternatives will be promoted and opportunities afforded to enlist in ridesharing programs.

(c) **Flexible Hours.** The Developer will promote the use of flexible work schedules to reduce peak-hour trip generation through the following measures:

(1) during the lease negotiation process, potential office tenants at the Project will be encouraged to adopt flexible work schedules for their employees;

(2) utilities will be provided to office tenants at the Project between the hours of 7:00 AM and 7:00 PM, Monday through Friday, at the Developer's cost, without mark-up.

(d) **Transit Pass Subsidies.** Developer will endeavor to lower transit costs for workers employed at the Project by the following measures:

(1) Developer will offer to all persons in the direct employ of the Developer a subsidy equal to twenty percent (20%) of the cost of MBTA passes, private commuter bus fares, or boat fares in each case at the actual cost of the employees MBTA pass;

(2) Developer will encourage employer-tenants to offer to employees in the Project a subsidy of up to twenty percent (20%) of the cost of a monthly MBTA, private bus or commuter boat pass. Developer will include in all lease negotiation packages an exhibit describing said subsidy program and outlining the advantages to employers of subsidizing transit expenses (Exhibit C);

(3) The Developer's annual monitoring report to the BTD shall include documentation of the occupancy rate and the rate of transit usage for each office building. Beginning in the third year after receipt of a Certificate of Occupancy for each of the office buildings, in any year that each of the office buildings in the Project achieves an occupancy rate of greater than fifty percent (50%) and the rate of transit usage is below seventy percent (70%), Developer shall implement the transit subsidy program for employees in such office building which shall be as follows:

1. The subsidy will be offered to the employees of the office building whose tenant-employers agree in writing with the Developer to participate in the subsidy program for a term of one (1) year;

2. The Developer's contribution to the subsidy program shall be for the lesser of one (1) year or until the next annual monitoring report is submitted which documents that either the occupancy rate has dropped below fifty percent (50%) or in the event that the occupancy rate is greater than fifty percent (50%), that the rate of transit usage in such building is above seventy percent (70%).

3. The Developer's contribution to the subsidy program shall be in the amount equal to the subsidy provided by the tenant-employer, but not in excess of ten percent (10%) of the cost of MBTA passes or private commuter boat fares in each case at the actual cost of the employees MBTA pass.

SECTION 3. Parking

(a) **Underground Parking.** Subject to the receipt of all necessary governmental approvals, including but without limitation the Boston Air Pollution Control Commission ("BAPCC"), the Project will contain a total of 1,000 underground parking spaces:

(1) Until the completion of Phase II, the 1,000 parking spaces will be allocated as follows: 460 spaces shall be employee/exempt spaces the use of which shall be restricted to tenants, employees, customers, clients, patients or guests of the Project ("Project Exempt Spaces"), 59 spaces shall be employee/exempt spaces the use of which shall be for tenants, employees, customers, clients, or guests of the Hotel ("Hotel Exempt Spaces"), and 481 spaces shall be commercial parking spaces for which a Parking Freeze Permit ("Commercial Spaces")is issued (341 of said spaces to be those contemplated by the existing parking freeze permits for the surface parking lots and 140 of such spaces to be withdrawn from the inventory of unused commercial parking spaces maintained by said BAPCC). BTD shall support Developer's application to the BAPCC for a Parking Freeze Permit, and confirmation of exemption, respectively, to enable such use and operation of the garage portion of the Project.

(2) Upon completion of Phase II, 140 of the Commercial Spaces shall be converted to Project Exempt Spaces . The resultant allocation of the 1,000 parking spaces will be as follows: 600 spaces shall be Project Exempt Spaces , 59 spaces shall be Hotel Exempt Spaces, and 341 spaces shall be Commercial Spaces. BTD shall support Developer's application to the BAPCC for a revised Parking Freeze Permit, conversion of Commercial Spaces to Project Exempt Spaces and confirmation of exemption, respectively, to enable such use and operation of the garage portion of the Project.

(b) **Short-term Parking.** In order to assure the availability of parking for short-term use:

(1) Until the completion of Phase II, 140 of the 600 the Project Exempt spaces will be available as Commercial Spaces in addition to the 341 Commercial Spaces for a total of 481 Commercial Spaces. The 481 Commercial Spaces will be utilized as follows: 25 for vanpools, 42 for neighbors, 155 for all parkers and 259 will remain closed until 9:30 AM on weekdays.

(2) Upon completion of Phase II, 140 Commercial Spaces will be converted back to Project Exempt Spaces. The remaining 341 Commercial Spaces will be utilized as follows: 25 for vanpools, 42 for neighbors, 155 for all parkers and 119 will remain closed until 9:30 AM on weekdays.

(3) For so long as other parking facilities in the vicinity of the Project which are subject to regualation by either BTD or BAPCC adhere to the same policy, no "early-bird" rates, giving a discount to all-day parkers who arrive early in the day, will be offered.

(4) The Developer's annual monitoring report to the BTD shall include documentation of the occupancy rate for each office building. Until the sooner of two years after receipt of the Certificate of Occupancy for each of the office buildings or each of the office buildings achieves an occupancy rate of greater than seventy-five percent (75%), the parking rates will be structured so that the maximum daily weekday rate will be at the lesser of three and one half (3.5) times the cost for the first hour or the prevailing rate for competitive office buildings in the immediate vicinity. After such time as each of the office buildings achieves an occupancy rate of greater than seventy-five percent (75%), the parking rates will be structured so that the maximum daily weekday rate will be at least five (5) times the cost for the first hour.

(5) The Developer will not provide, and will not subsidize any tenant to provide, a program for validating or discounting parking rates for shoppers at Project stores for the period from 9:00 AM to 4:00 PM on weekdays.

(c) **Chinatown Parking.** Developer will make up to 75 parking spaces available at reduced rates for the period between 8:00 PM to 7:00 AM to those holders of Chinatown Resident Parking permits who are pre-registered with the Project's garage operator. This program will be promoted through neighborhood newsletters and local newspapers.

(d) **Snow Emergency Parking.** For the duration of Snow Emergencies declared by the City of Boston prior to 7:00 AM, but in no event for more than six hours, up to 75 parking spaces will be provided as available to Chinatown Resident parking permit holders who are pre-registered to participate in the overnight parking program described in subparagraph (c) above, at the same parking rates applicable for such overnight parking.

SECTION 4. Access and Site Circulation

(a) In order to improve vehicular access to the Site and sidewalk design of Avery Street, Hayward Place and Washington Street, various changes will be made in the right-of-way and the roadway and subject to the receipt of all necessary governmental approvals, including without limitation the City of Boston Public Improvement Commission,. The width of the Avery Street roadway will not change as a result of these changes. The roadway and sidewalk design of the area adjacent to the Project is detailed in the plan, attached hereto as Exhibit D.

(b) In order to ensure that traffic along Avery Street is not obstructed as a result of operations at the entrance to the Project Hotel, Developer will provide the following:

(1) a doorman/valet at the hotel entrance, whose responsibility it will be to prevent any queuing onto Avery Street of taxis, buses, or other vehicles approaching, departing, or waiting at the hotel.

(2) an illuminated signal at the corner of Washington and Avery Streets and controlled by the hotel doorman/valet for the purpose of signaling taxi cabs queuing at the Washington Street taxi stand and directing them to proceed to the hotel entrance along Avery Street.

The developer will be held responsible for the smooth operation of traffic along Avery Street to the extent that traffic flow is obstructed by the Project Hotel. If, in the reasonable opinion of the BTD, traffic on Avery Street is obstructed by vehicles associated with the Project Hotel, Developer will take mutually agreeable steps to alleviate the problem.

SECTION 5. Pedestrians and Bicycles

(a) Pedestrian pathways across the Site will be lighted and provided with security services in accordance with the design outlined in the Development Impact Project Plan for the Project. Signage will be provided clarifying pedestrian routes.

(b) Pedestrian warning lights will be installed at all Project garage entrances.

(c) Parking for bicycles will be provided in a secure area within the Project garage, the use of which shall be at the sole risk of the bicycle owners.

SECTION 6. Truck Deliveries

(a) The Project will be designed with off-street loading facilities. All truck deliveries to the Project, other than courier services, shall utilize the off-street loading facilities at all times. Truck deliveries at the Project will be discouraged during the hours of 7:00-9:00 AM or 4:00-6:00 PM.

(b) No deliveries by trucks of greater than 40 feet in length not using the loading facilities will be allowed without a Street Occupancy Permit from the BTD. Such limitation shall be included in the Developer's lease agreements with tenants.

SECTION 7. Capital Improvements and Enforcement

Prior to obtaining a building permit for the construction of the first phase of the Project, the Developer shall contribute the sum of $260,096.00 to the City of Boston, acting through the BTD, for the purpose of funding those off-site public improvements and traffic enforcement measures, as outlined in Exhibit F attached hereto, relating to the mitigation of impacts of the Project on the area surrounding the Project. BTD will make good faith efforts to complete or to arrange for the completion of any improvements funded in whole or in part by this contribution prior to the Effective date.

SECTION 8. Construction Management Plan

Developer shall prepare Construction Management Plans which detail measures to ensure the maintenance of existing levels of service on roadways adjacent to the Project during the construction of each phase of the Project and to minimize disruption at neighboring residential sites. Such plan for each such phase shall be submitted to the BTD for approval, which approval must be obtained prior to the issuance to the Developer by the City of Boston Inspectional Services Department ("ISD") of a building permit for such phase. It is understood by the Developer that the approval of a Construction Management Plan for a phase of the Project is a precondition to the issuance of a building permit for such phase by ISD.

The Construction Management Plan shall include, but not be limited to, measures dealing with: proposed street occupancies, use of tower cranes, sidewalk occupancies or obstruction of pedestrian flow, materials staging, transportation of and parking for construction workers, hours of construction work, and materials delivery.

Failure to comply with the provisions of the Construction Management Plan may result in withdrawal of a building permit or Street Occupancy Permit until such time as the Commissioner of Transportation determines that the Developer is in compliance with the Construction Management Plan.

SECTION 9. Defaults, Remedies and Compliance

In the event that the Developer shall fail to comply with or shall breach any provisions of this Agreement, and such failure or breach shall continue for 60 days after written notice thereof from the BTD, the BTD may institute any such actions and proceedings as the BTD may deem appropriate, including, but not limited to, an action to compel specific performance and/or to collect any and all damages, expenses, losses and costs caused by such failure or breach, including legal expenses. A breach or default which cannot be cured retroactively shall be deemed to be cured if the condition giving rise to the default does not continue after notice of such default and the expiration of the 60 day cure period set forth herein.

In the event that Developer seeks an affirmation that no defaults exist and that the Developer is in compliance with the terms of this aggreement, it may request in writing a Certificate of Compliance from BTD. BTD shall issue a written Certificate of Compliance within thirty (30) days notice of such request from Developer.

SECTION 10. Records and Reports

Developers shall keep and maintain books, records and other documents regarding compliance with this Agreement, and perform surveys and inspections on an annual basis regarding transportation impacts of the Project. The Developer shall make the same available at all reasonable times for inspection, copying, audit and examination by the BTD, and shall provide the BTD with an annual report that summarizes the same within sixty days of the end of the calendar year.

SECTION 11. Access to Project

Developer agrees that any duly authorized representative of the BTD registered with the Project's superintendent shall, at all reasonable times, have access to any portion of the Project relating to the Transportation Access Plan, Construction Management Plan, or other obligations of the Developer hereunder until the completion of the construction of the Project. Such representative shall register with the site superintendent before entering upon the Site or into the Project, which superintendent may require, in his sole discretion, that such representative be escorted within the Site or in the Project. Such representative shall comply with all saftey laws, rules and regulations applicable to the construction activity occurring on the Site or in the Project.

SECTION 12. Assumption of Liability

(a) Developer shall assume the defense of and hold the BTD, its officers, agents or employees, harmless from all suits and claims against them or any of them arising from any act or omission of the Developer, its agents or employees in any way connected with performance under this Agreement.

(b) BTD shall assume the defense of and hold the Developer, its partners, officers, agents or employees, harmless from all suits and claims against them or any of them arising from any act or omission of the BTD, its agents or employees in any way connected with performance under this Agreement.

SECTION 13. Assignment

Developer may assign its interest in this Agreement, but only subject to and by complying with the following conditions:

(a) At the time of the assignment, there shall be no outstanding notice of a default from BTD to the Developer which remains uncured;

(b) The assignee shall expressly assume and agree to perform and comply with all the covenants and provisions of this Agreement on the part of the Developer; and

(c) There shall be promptly delivered to the BTD the original or a duplicate original of the instrument or instruments containing such assignment to and assumption by the assignee.

(d) The provisions of this Section 13 shall not apply to a financing or refinancing of the Project or any portion thereof.

SECTION 14. Estoppel Certificates

BTD agrees at any time and from time to time upon written request by the Developer or any prospective purchaser of or lender to the Project, or any portion thereof, to execute, acknowledge and deliver to the Developer or such prospective purchaser or lender a statement in writing certifying that this Agreement is unmodified and in full force and effect (or, if there have been modifications, that the same is in full force and effect as modified, and stating the modifications), and stating whether or not BTD has issued any notice of default to the Developer pursuant to this Agreement and, if so, specifying each default as to which notice has been given, it being understood that any such statement delivered pursuant to this Section may be relied upon by any prospective purchaser of, lender to, or assignee of the Project or any portion thereof or the Developer's interest therein. No obligation to issue a certificate shall arise (1) unless Developer or such prospective purchaser or lender shll have submitted to BTD a written request therefor accompanied by such information as is required for an annual report to BTD in accordance with Section 10 hereof for the period from the last such annual report to the date of such request, and (2) until such time as the BTD has had a reasonable opportunity to inspect the Project. A reasonable opportunity for inspection shall be thirty (30) days from receipt of the request for such a certificate. Any request for a certificate given pursuant to this Section shall be prefaced with the following language printed in capital letters:

NOTICE
THIS REQUEST REQUIRES REPLY WITHIN
THIRTY (30) DAYS

If BTD shall have failed to issue such certificate within thirty (30) days after request made in accordance with this Section 14, the requesting party shall submit a duplicate copy of such request, but such duplicate request shall be prefaced with the following language in capital letters:

SECOND NOTICE
FAILURE TO REPLY TO THIS REQUEST WITHIN
THIRTY (30) DAYS SHALL RESULT IN
AUTOMATIC APPROVAL

If the BTD shall fail to respond to the second request for a certificate within thirty days after such second request, BTD shall be deemed to have issued a certificate confirming to the Developer and any such prospective purchaser or lender that this Agreement is unmodified and in full force and effect, that the BTD has not issued any notice of default to the Developer pursuant to this Agreement, and that the Developer is in full compliance with all of its obligations under this Agreement.

SECTION 15. Waiver

No act by or on behalf of the BTD shall be, or be deemed or construed to be, any waiver of any such requirement or proivsion, unless the same be in writing, signed by the BTD, and expressly stated to constitute such waiver. Any express waiver by the BTD of any rights, terms or conditions of this Agreement shall not operate to waive such rights, terms or conditions or any other rights, terms or conditions, beyond the specific instance of such waiver.

SECTION 16. Conflict of Interest

Developer covenants and agrees that is shall, in carrying out its responsibilities under this Agreement, comply strictly with each and every provision of Chapter 268A of the Massachusetts General Laws (the Conflict of Interest Law) to the full extent of the applicability of said provisions to the Developer.

SECTION 17. Successors and Assigns

The provisions of this Agreement shall be binding upon, and shall inure to the benefit of, the successors and assigns of the Developer (including without limitation any condominium association or other association having powers of control over the Site or any portion thereof under Chapter 183A, of the Massachusetts General Laws, and the public body of bodies succeeding to the interests of the BTD.

SECTION 18. Notices

All notices or other communication required or permitted to be given under this Agreement shall be in writing, signed by a duly authorized officer of the Developer, or of the BTD, and shall be deemed delivered if mailed, postage prepaid, by registered or certified mail, return receipt requested, or delivered by hand to the principal office of the party to which it is directed, which is as follows, unless otherwise designated by written notice to the other parties:

DEVELOPER:
Commonwealth Center Limited Partnership
℅ F. D. Rich Company of Boston, Inc.
99 Summer Street, Suite 1800
Boston, Massachusetts 02110-1200

with a copy to:
John A. Kessler, Jr.
Gaston & Snow
One Federal Street
Boston, MA 02110

BTD:
City of Boston Transportation Department
One City Hall Plaza, Room 721
Boston, Massachusetts 02201
ATTENTION: Commissioner

with copies to:
City of Boston Transportation Department
One City Hall Plaza, Room 721
Boston, Massachusetts 02201
ATTENTION: Special Assistant Corporation Counsel

City of Boston Law Department

One City Hall Plaza, Room 615
Boston, Massachusetts 02201
ATTENTION: Corporation Counsel

Boston Redevelopment Authority
One City Hall Plaza
Boston, Massachusetts 02201
ATTENTION: Chief General Counsel

SECTION 19. Amendment

This Agreement, or any part thereof, may be amended from time to time hereafter only in writing executed by BTD and Developer.

SECTION 20. Future Adjustments to Plan

The provisions of this Agreement reflect the existing conditions detailed in the Transportation Access Plan. If, during the five years following execution of this Agreement, these conditions have changed materially, the BTD, and the Developer shall cooperate to mutually agree upn such reasonable adjustments to Transportation Access Plan as may be desirable to respond to such changes. The Developer’s cooperation shall be measured in light of fiscal, contractual, fiduciary, regulatory or other limitations or constraints on the Developer. Without limiting the generality of the foregoing, except as expressly set forth in this Agreement, the Developer shall not be required to make expenditures of money for road or transit facilities or improvements, subsidization of transit or other commuting costs, or any capital expenditure.

SECTION 21. Severability

Each and every covenant and agreement contained in this Agreement is and shall be construed to be a separate and independent covenant and agreement. If any term or provision of this agreement or the application thereof to any person or circumstance shall to any extent be invalid and unenforceable, the remainder of this Agreement or the application of such term to persons or circumstances other than those as to which it is invalid or unenforceable shall not be affected thereby, and each term and extent permitted by law.

SECTION 22. Governing Law

This Agreement shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts.

SECTION 23. Execution in Counterparts

This Agreement may be executed in any number of counterparts. All such counterparts shall be deemed to be originals and together shall constitute but one and the same instrument.

SECTION 24. Effective Date

This Agreement shall be deemed to become effective as of the date it shall be executed and dated by all parties.

SECTION 25. Expiration

All commitments herein shall be in full force and effect for the Term of this Agreement.

SECTION 26. Mitigation Expenses

Except as otherwise provided in Section 7 hereof, all mitigation measures undertaken pursuant to this Agreement shall be at the expense of the Developer and no expense will be incurred by the BTD with respect to such measures.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be signed, sealed and delivered by their respective duly authorized representatives, as of the date first written above.

WITNESS:

CITY OF BOSTON TRANSPORTATION
DEPARTMENT

BY____________________________________
Richard A. Dimino, Commissioner

DEVELOPER:

BY____________________________________
Thomas L. Rich, President

Hereunto duly authorized

Approved as to form:

____
Corporation Counsel
City of Boston

APPENDIX B

Draft Section 61 Findings

SUMMARY OF ENVIRONMENTAL EFFECTS AND MITIGATION

The following is a summary of the potential environmental impacts associated with the Proposed Project, as well as mitigation measures which will be utilized to minimize any adverse environmental effects. This section also includes the results of additional analyses required in the SFEIR and the expanded mitigation commitments. The summary is presented in similar fashion to a Draft Section 61 findings for all aspects of the project required by the final scope.

A. Transportation

Analyses of the effects of the Proposed Project on traffic, pedestrian, and public transit operations, as presented in the FPIR/FEIR, has been supplemented in this SFEIR.

Traffic Impacts:

Within the Study Area defined by the Scoping Requirements, and supplemented by the Preliminary Adequacy Determination, these traffic-related analyses indicate that the greatest impact under the Build and No-Build scenarios will occur at the three Study Area intersections of Boylston Street/Tremont Street, Essex Street/Harrison Avenue Extension, and of Essex Street/Surface Artery/Lincoln Street. Concurrently, analyses conducted by Boston Crossing and One Lincoln Street have identified additional intersections with combined impacts from the three projects and other background projects that necessitate some form of mitigation. These intersections include:

- Kneeland Street/Surface Artery
- Hayward Place/Avery Street/Washington Street
- Kingston Street/Bedford Street
- Church Green
- Tremont Street/Boylston Street
- Washington Street/Boylston Street/Essex Street
- Harrison Avenue Extension/Chauncy Street/Essex Street (Phillips Square)
- Avenue de Lafayette/Essex Street/Kingston Street
- Surface Artery/Lincoln Street/Essex Street
- Boston Crossing Garage Entry/Avenue de Lafayette
- Boston Crossing Garage Entry/Chauncy Street/Bedford Street

Traffic Mitigation:

On the basis of the combined impacts from the three major proposed projects, Boston Crossing, One Lincoln and Commonwealth Center, a joint mitigation program has been developed by the Boston Transportation Department with allocation of associated responsibilities to be borne proportionally by the three developments.

The BTD has estimated that mitigation to these locations, including signalization, lane markings, street reversals, signage and enforcement will entail a total cost of $661,400. The BTD has apportioned each Project's Proponent its share of the above total cost of these mitigations, on the basis of each project's gross square footage and PM Peak Hour trip generation characteristics. The Commonwealth Center Proponent has been apportioned approximately 39 percent of this amount, or $260,096. This amount has been agreed to as part of the Transportation Access Plan Agreement (Appendix A) between the Project Proponent and the City of Boston Transportation Department. (See Tables 1 and 2 for a more detailed cost breakdown).

Pedestrian Impacts:

The results of analyses of pedestrian activity in the vicinity of the site display sidewalk reservoir space and crosswalk service levels which are generally in the impeded and constrained range.

Pedestrian Mitigation:

As part of the construction of the Phase I site, the Project Proponent will accommodate the City's planned transportation improvements to reverse direction of Avery Street from its existing condition. The realignment of Avery Street can serve to increase sidewalk widths on both edges of Avery Street by six inches. The Project Proponent proposes to undertake the widening of the sidewalk on Avery Street along the Project site and will coordinate with the City for other sidewalk widenings or improvements bordering the project site in the vicinity of Avery Street and Mason Street. In addition, a widening of the sidewalk on the western edge of Washington Street by approximately three feet along the Project site is proposed by the Project Proponent. Due to the impracticality of widening the existing sidewalks in the vicinity of the site on Tremont and Boylston Streets, it is proposed instead that the crosswalks at the signalized intersections at Washington/Boylston, Tremont/Boylston and Avery/Tremont be each widened from the existing average 10 feet of width to between 18 and 25 feet; thereby doubling crosswalk capacity and easing projected constrained pedestrian conditions. The Proponent is willing to commit to the responsibility for the implementation of the above pedestrian mitigations.

The Proposed Project reinforces the pattern of streets and alleyways in the area by providing pedestrian through-block connections between Washington and Tremont Streets, and Avery and Boylston Streets. The primary pedestrian connector is the enclosed, two story retail arcade that runs parallel to Avery Street on Parcel 30 between the hotel and the office building (see Figure 8). A secondary pedestrian connection is made from this arcade to the office building lobby entry on Boylston Street. The arcade acts to break up the Parcel 30 block into two distinct building massings. By maintaining existing private ways which border the site, a physical separation is provided between the project components and the adjacent buildings without compromising the continuity of streetwalls.

Though block connections are also provided in the Keith Block, connecting the Washington Lobby to the new public open space at Avery Street.

Pedestrian operations at the Tremont Street/Boylston Street signalized intersection have been re-analyzed to determine the requirements necessary to provide for "impeded" or better conditions for pedestrians at this intersection. It has been determined that pedestrian phase timing, if lengthened to allow for "impeded" pedestrian operations or better, would result in Level of Service "F" conditions for vehicles during peak hours. By widening the crosswalk to 28 feet, the traffic operations will be maintained Level of Service "D" on better and pedestrian condition will provide for "impeded" or better conditions during peak hours.

Transit Impacts:

The analyses related to transit impacts indicate that all pending developments in the Midtown Cultural District will generate a total of 9,555 PM Peak Hour public transportation trips, of which an estimated 2,256 (or 24 percent) would be generated by the Proposed Project. The projected ridership impacts on the bus transit, mass transit, and commuter rail networks is expected to be offset by ongoing programs of the MBTA and private service providers to add additional buses and rail cars as demand warrants, as well as via MBTA programs to expand Red, Orange, and Green line station capacities through platform extensions to accommodate larger trains.

Transit Mitigation:

Any residual peak demand not met by the above measures is expected to be met by on-site employer and business operations' implementation of staggered operating hours and/or flexible employee arrival and departure times. These measures would help to alleviate potential crush loadings within a limited amount of time in the peak hours, particularly during the PM Peak Hour immediately after 5:00 PM. A more evenly spread demand over the course of the peak hour would prove more efficient in utilizing total capacity during that time.

In addition, the Proponent, as part of its Transportation Access Plan Agreement (Appendix A) with the City, has committed to a series of specific mitigations to provide for increased transit capacity in the vicinity of the site to include:

1. **MBTA Orange Line**

    - Construction of a new widened stairway and entrance enclosure for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project.

    - Provision for a new handicapped elevator for the MBTA Southbound Orange Line Chinatown Station within the southeast corner of the Project.

- Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate Orange Line ventilation requirements.

- Provision of on-going maintenance of the new MBTA Southbound Orange Line Chinatown Station entrance.

2. **MBTA Green Line**

- Provision of space within the Project for a proposed future pedestrian connection beneath Tremont Street to the existing MBTA Green Line Boylston Street Station.

3. **MBTA Proposed Transitway Line**

- Provision of space between the two phases of the Project to allow for the proposed alignment of the MBTA Transitway line beneath Avery Street.

- Provision for coordinated construction of Project's northern underground garage slurry wall to serve as a potential southern side to the MBTA Transitway Line along Avery Street.

- Provision for coordinated construction of the Project's eastern underground garage slurry wall to serve as a potential western side to the MBTA pedestrian connection between the Orange Line Chinatown Station and the proposed Transitway Line Hayward Place Station.

- Provision for an emergency ventilation shaft within the Project Proponent's property to accommodate the proposed Transitway Line ventilation requirements.

B. Wind

Impacts:

The seasonal analysis of the proposed Commonwealth Center project, per the DPIR/DEIR design and the amended design contained in the FPIR/FEIR, shows that the most probable high-speed winds will occur during the winter and spring months. The design tested in the DPIR/DEIR recorded locations exceeding the BRA's 31 miles per hour (mph) one percent gust velocity guideline four times on the annual basis and six times on the seasonal basis. The amended design with the revised Boston Crossing project resulted in the BRA's 31 mph guideline being exceeded five times on the annual basis and seven times on the seasonal basis. Although wind speeds appear to increase in comparison with the DPIR/DEIR results, the amended design for the Commonwealth Center project and revised Boston Crossing Project has effectively reduced wind speeds in comparison to conditions tested for the Boston Crossing DPIR/DEIR.

Mitigation:

Based on the amended design as presented in the FPIR/FEIR, three sensor locations at which wind gust velocities exceed the BRA standard have been identified as resulting from the Proposed Project in conjunction with existing and background projects. They are:

- At the corner of Boylston and Tremont Streets, sensor location #5.
- At the southeast corner of Parcel 30, sensor location #4.
- At the entrance to 600 Washington Street near the southeast corner of Parcel 30, sensor location #17.

Sensor Location #5

In comparison with the results of the previous wind velocity analysis presented in the DPIR/DEIR, the revision of the north tower design on the Keith Block and the lowering of the Parcel 30 retail arcade has dramatically reduced the exceedence of the 31 mph, annual 1% gust velocity at sensor location #5 on the corner of Boylston and Tremont Streets. Under the revised design, the effective gust velocity for this sensor location was measured at 31.3 mph compared to 35.1 mph measured for the same location under the previous design presented in the DPIR/DEIR. No further feasible means of wind velocity reduction has been found, except for heavy tree planting on the Boston Common. With the new tree plantings proposed by the Department of Parks and Recreation for the Boston Common, an improvement in existing conditions may be effected, further reducing the effects generated for the Proposed Project scenario. It should be noted that for both No-Build conditions tested for this sensor location (DPIR/DEIR and FPIR/FEIR), wind gust velocities exceed the velocity measured for the revised design Build Scenario.

Sensor Location #4

The mitigation testing procedure at the southeast corner of the Parcel 30 office building (Sensor #4), where southwest winds intensified along the pedestrian level, included testing canopies, banners, and tree planting until the proper combination was found to ameliorate the adverse wind conditions. Combinations of canopies and vertical banners on the Parcel 30 southern facade provided no workable solution. By planting four to five trees (20 foot high) along the north side of Boylston Street from the Franciscan Building to Washington Street (see Figures 4 and 5 of the FPIR/FEIR), the energy of the lateral flow dissipated, thereby reducing the velocities at sensor 4 from 29.8 mph to 25.00 mph annually and from 31.8 mph to 26.6 mph on the maximum seasonal basis. The Project Proponent proposes to undertake the planting of five trees, the location of which are indicated along Boylston Street at the Project site as part of the Project's sidewalk and landscaping plan (see Figure 4 of the FPIR/FEIR).

Sensor Location #17

Solving the situation across the street along Washington Street (Sensor #17) must be approached by altering the conditions in the immediate area. Attempts to "trip" or redirect the flow by vertical banners and canopies on the southern facade of Parcel 30 were unsuccessful. The solution to the problem involves planting four to five trees (20 feet high) spaced along Washington Street from Hayward Place to Washington Street (see Figures 4 and 5 of the FPIR/FEIR). Testing demonstrated a reduction of windspeeds from 29.9 mph to 26.3 mph annually and from 31.9 mph to 28.2 mph, based on peak seasonal 1% gust velocity. A combination of two vertical canopies (30 feet high by 4 feet wide) attached to 600 Washington Street and positioned at one-third building length apart would also be an effective mitigation measure.

Due to the uncertainty of cooperation with the property owner of 600 Washington Street, and the historic nature of the building, the Project Proponent proposes to provide four trees in the location indicated conditioned to the cooperation of the building owner and the approval of the City of Boston. The Project Proponent will coordinate with the City for the planting of these trees, as well as others proposed along the project site.

No mitigation measures are possible to reduce velocities at sensor locations, 8, 33, and 34, as requested in the BRA's Preliminary Adequacy Determination. The local flowfield is dominated by strong winds deflected off Tremont-on-the-Common and are not a direct result of the Proposed Project.

C. Shadow

Impacts:

A series of computer-generated shadow analyses were performed in the DPIR/DEIR to predict and evaluate the extent of new project-generated shadows. In response to the BRA's comment, further shadow analyses were conducted in the FPIR/FEIR to test the conformance of the Commonwealth Center and Boston Crossing Projects to the zoning criteria established by the BRA, and incorporated into Article 38 of the Boston Zoning Code. This analysis indicates that the total area of net new shadow cast on the Boston Common by the Commonwealth Center and Boston Crossing, together, is approximately .88 acres, or 38,000 square feet, which is in conformance with Article 38.

In response to the comments by the Trustees of Tremont-on-the-Common relative to the shadow cast on the swimming pool, the Project Proponent has reexamined the shadow analyses conducted for June 21, at 9:00 a.m., 12:00 noon and 3:00 p.m. The Commonwealth Center project does not cast any new shadows on Tremont-on-the-Common. The swimming pool is shaded by the Opera House during most summer mornings and by the Tremont-on-the-Common building itself during most summer afternoons.

Mitigation:

Based on the revisions to the site and building design of both the Proposed Project and the Boston Crossing project, made subsequent to their respective DPIR/DEIR's, the net new shadow generated by both projects falls within the allowable guidelines established under Article 38 of the Boston Zoning Code.

Design revisions to the Proposed Project have included the total redesign and reorientation of the north tower on the Keith Block, and the lowering of the total height of the south tower on Parcel 30. No additional design revisions are proposed to either the height or massing of the Proposed Project.

The Project Proponent believes that the development of the Commonwealth Center project with the various office, retail, hotel and cultural uses will increase the value of the Tremont-on-the-Common units.

D. Daylight

Impacts:

A daylight study was performed utilizing the Boston Redevelopment Authority's computer software. As reported in the DPIR/DEIR, results of this analysis indicate that in comparison to the Enhanced IPOD/Infill alternative, the Proposed Project actually allows the same or higher levels of daylight to penetrate the site at 6 of the 13 locations tested. This is due primarily to the fact that the tower elements of the Proposed Project are setback from the traditional streetwall base of the buildings. Locations which experienced increases in daylight obstruction levels are well within a range typical of the Boston Downtown.

In response to the BRA comments, additional information and clarification of certain observation points has been provided in the FPIR/FEIR. Points #10 and #13 have been reanalyzed with the revised north tower design, on the Keith Block. The analysis indicate that the new design configuration results in acceptable daylight obstruction percentages (see Technical Appendix of the FPIR/FEIR).

Mitigation:

Based on the results of the daylight analysis presented in the DPIR/DEIR, and subsequent design revisions, the massing of the Proposed Projects results in an acceptable level of daylight penetrating the site to street level. Based upon the revised urban design configuration of the Proposed Project, no additional design revisions are proposed to either the height or massing of the buildings.

E. Air Quality

Impacts:

Results of the traffic-related air quality analysis performed in the DPIR/DEIR indicate that high traffic volumes and long vehicle queues produce CO values that approach the National Ambient Air Quality Standards (NAAQS) on the east side of Tremont Street. Through further refinement of the air quality model and appropriate adjustment to the trips generated by the Proposed Project, the intersection was analyzed for 1996 Build one and eight-hour conditions. The result of the analysis show compliance with the NAAQS. Therefore, the Project will not interfere with the Department of Protection's goal of attainment and maintenance of the NAAQS.

In response to the BRA comment, a mesoscale analysis of nonmethane hydrocarbons was prepared in the FPIR/FEIR. The results of the analysis indicates that traffic generated by the Proposed Project makes an insignificant contribution to the regional burden of ozone on the major arterials of Boston.

Mitigation:

Based on the results of the air quality analyses for traffic and the underground garage performed in the DPIR/DEIR and amended in this report, no required mitigation is indicated. As part of the traffic mitigation measures identified in the overall transportation analysis, reductions to site specific carbon monoxide concentrations may occur in the vicinities of the intersections at Boylston and Tremont Streets, Essex Street and Harrison Avenue Extension, and at Essex and Lincoln/Surface Artery.

Changes proposed to the parking garage will maintain appropriate air handling equipment and monitoring measures to be consistent with the National Ambient Air Quality Standards.

F. Geotechnical

Impacts:

A geotechnical assessment, conducted in the DPIR/DEIR, indicates that construction of the below-grade parking levels will require a general excavation approximately 55 to 65 feet in depth within a major portion of the Parcel 30 area. The bottom of the excavation will be within or near the top of the glacial till, approximately 45 feet below groundwater.

As reported in the DPIR/DEIR, a reinforced concrete diaphragm wall (slurry wall) is planned at the perimeter of the deep basement to act as both the temporary earth support system and the permanent exterior basement wall. The wall will be extended a sufficient depth below the excavation level to provide an effective groundwater seepage cutoff both during construction and once the building is operational, provided an underdrain system is installed below the lowest level floor slab. The use of a perimeter slurry wall will minimize the need for dewatering and any potential decreases in groundwater level in the area, as well as provide a semi-rigid lateral earth support system to reduce the potential for inward movement of the wall which could cause ground movement outside the excavation.

For the structure support within the deep basement, foundations will be constructed inside the completed excavation, bearing directly on the subgrade soil or installed from the ground surface using non-displacement, low-vibration techniques. If used, end-bearing piles will be installed in preaugered holes to minimize vibration and heave.

In response to comments contained in the Certificate of the Secretary of Environmental Affairs on the Final Environmental Impact Report, further information has been provided in this SFEIR relative to discharge of groundwater collected in the permanent underslab drainage system. Based upon observed seepage conditions at Rowes Wharf (5 levels deep), 75 State Street (6 levels) and 125 Summer Street (5 levels), and on-site seepage conditions, a flow rate of five to ten gallons per minute is anticipated for the Commonwealth Center project.

Mitigation:

As presented in the DPIR/DEIR, the Proposed Project will employ construction of a slurry wall to minimize the need for dewatering and reduce the risk of potential decreases in groundwater levels in the area. The slurry wall will also reduce the potential for ground movements outside the excavation area.

In addition, the Project Proponent will specify construction performance criteria that will be imposed on the contractor or construction manager and careful monitoring of construction performance will be employed to mitigate adverse impacts on adjacent buildings, tunnels and utilities.

The Project Proponent proposes to apply for a permit to discharge groundwater and runoff collected during temporary construction dewatering into City storm drains.

For permanent discharge of groundwater collected in the underslab drainage system, the Project Proponent will explore two options for disposal of groundwater as alternates to discharge into City storm drains. The options currently under consideration are, 1) utilizing the pumped water within the project for non-potable use or, 2) both discharging to recharge wells located at the perimeter of the site. Although both options are feasible, the current preferred option is the use of the water as a resource within the building, as it will probably be more cost effective and technically feasible.

G. Solid and Hazardous Wastes

Impacts:

Solid Waste

As reported in the DPIR/DEIR, the Proposed Project is anticipated to generate approximately 11,300 pounds of solid waste per day.

Hazardous Waste

A Chapter 21E Site Assessment ("Oil and Hazardous Material Site Evaluation") and a "Survey Report of Asbestos and PCB-Containing Materials" have been conducted since the DPIR/DEIR submittal to determine the probability of oil or hazardous materials being present on or beneath the ground surface of the site. Based upon these reports, the evidence collected suggests that contamination of the site with hazardous wastes is minimal. Both studies are currently available through the Boston Redevelopment Authority's library.

Detailed procedures for handling, testing and disposal of contaminated soil will be outlined in the project specifications and the Excavated Material Management Plan. These procedures will be implemented if contaminated soil is encountered during excavation.

Mitigation:

The Project Proponent will commit to collect and dispose of all solid waste through a private contractor to ensure high level sanitary conditions. Based on the analysis of solid wastes generated by the Proposed Project in the DPIR/DEIR, no further mitigation is indicated.

The Project Proponent proposes to provide an Excavated Material Management Plan to the DEP that will detail procedures for handling, testing and disposal of contaminated soil during the excavation process. These procedures will be implemented if contaminated soil is found during excavation.

H. Noise

Impacts:

As presented in the FPIR/FEIR, the results of the analysis indicate increased traffic associated with the project will result in an imperceptible increase in noise levels at the eight locations analyzed (i.e., noise increase of 0-1 decibels).

In response to BRA comments, an analysis of the noise generated by the project's building equipment was conducted in the FPIR/FEIR. Within the preliminary building equipment specifications assumed for the Schematic Design Phase of the Proposed Project, general equipment types and locations have been identified which will require some form of sound isolation, containment or alteration.

Mitigation:

Acoustical design treatments (e.g., slab construction, baffles, etc.) will ensure adjoining tenant space of a noise criteria of 40-50 which is typical of a multi-story building. Additionally, an acoustical engineer will be hired to identify noise problems and design architectural treatments to ensure that the building complies with all state and local codes regarding noise generation and transmission.

Implementation of traffic operation improvements by the Project Proponent as outlined in the transportation mitigation section of this report will also improve local noise conditions.

I. Construction

Impacts:

Project construction is estimated to begin in the Winter of 1990 and be completed by the end of 1996. The project will be executed in two phases with Phase I demolition and construction commencing in the Winter of 1990. Phase I completion is anticipated between 1992 and 1993. Phase II construction is estimated to begin in 1994 and be completed in 1996.

Construction activity will generate temporary increases in area noise, traffic, dust and emission levels. However, it is anticipated that direct emissions from construction equipment will be insignificant. The main generator of noise during project construction will be trucking, which is a short-term and temporary condition. The number of workers on-site during the peak construction period is estimated to be 500, of which one-half are projected to be Boston residents, most using available public transit to and from the site.

An assessment of the cumulative impacts and proposed construction coordination between the Proposed Project and other construction projects in the area, has been provided in the FPIR/FEIR. Further information has been provided in the FPIR/FEIR relative to the amount and types of materials to be demolished including the method and location of disposal.

Mitigation:

The Project Proponent will supply a Construction Management Plan to the Boston Redevelopment Authority and the Boston Transportation Department as part of the required submission of a Transportation Management Plan. The following measures will be employed to reduce the effects of construction in the surrounding area:

- Possible use of implosion for the demolition of certain buildings in order to minimize the duration and overall noise level generated by conventional demolition.

- Inspection of all construction equipment to ensure that they are properly tuned and that noise mufflers are in place and in proper operating condition.

- Exposed dry surfaces will be wetted on a regular basis to minimize dust.

- Sidewalks and roadways will be cleaned of construction dirt on a regular basis.

- Location of aggregate storage piles away from Boylston, Tremont and Washington Street in order to minimize impact on areas of pedestrian activity.

- Use of covered delivery trucks in order to minimize spills.

- Possible use of tower cranes, in lieu of mobile cranes, in order to avoid impacts on local street operations.

- Scheduling of typical construction hours between 7:00 a.m. and 3:30 p.m. in order to minimize travel during peak commuting hours.

- Development of a full traffic maintenance plan to be coordinated with and approved by the Boston Traffic Department, Public Works Department and Fire Department.

- Assignment of police details commensurate with truck activity in or order to minimize impacts on normal automobile traffic and pedestrian patterns.

- Use of construction fence surrounding the site in order to partition such areas from pedestrian activity or surrounding land uses. Covered pedestrian bridges will be installed over sidewalks wherever dictated by overall construction activity.

- Proper disposal of all demolition/construction waste by licensed haulers, in accordance with all pertinent State and City regulations.

J. Rodent Control

Impacts:

Details of a more frequent rodent control service program has been provided in the FPIR/FEIR.

Mitigation:

A rodent control program will be initiated prior to demolition of existing buildings on the site. The program, to be administered by a licensed pest control contractor, will include routine treatments for rodents in the basement and first two stories of all existing structures. Upper floors will be inspected and treated as needed.

The program will include weekly visits to inspect and treat rodents. Visits will continue to be made until such time as they demonstrate that semi-monthly visits are in order. For the duration of construction, inspections will be made twice a month, and will be increased if circumstances so dictate.

K. Urban Design

Impacts:

The existing Project site is situated in Boston's Midtown Cultural District proximate to the Boston Common, the Financial District, the Downtown Crossing retail district, Chinatown, Park Plaza and the "Adult Entertainment District". The Project site and the immediate surrounding area is currently characterized by many vacant buildings and surface parking lots. The existing buildings in the area exhibit a variety of architectural styles dating from various periods of the City's history.

Following the Preliminary Adequacy Determination issued from the Boston Redevelopment Authority, specific program reductions and design modifications have been made to reduce the effects on the urban environment generated by the Proposed Project and to enhance the public access to public areas within and surrounding the Proposed Project.

The Proposed Project, as revised prior to the submission of the FPIR/FEIR, continues to reinforce the historic street pattern and streetwall heights, as well as the traditional scale of buildings elements, materials and fenestration at the pedestrian level. In addition, the northern office tower on the Keith Block has been entirely redesigned to:

- reduce the extent of shadow on the Boston Common,
- reduce the width of the tower face toward the Boston Common,
- reduce the size of the tower floor plates,
- increase the ratio of height to width, and
- increase the distance between the north and south towers.

A small reduction in distance has occurred between the north tower and the proposed tower on Hayward Place. This is due to the design and positioning of the north tower approximately 7 feet closer to Washington Street to achieve a maximum shadow reduction on the Boston Common. Additionally, refinements have been made to the top of the south tower on Parcel 30 to reduce shadow generated on the Boston Common, lowering the total height by approximately 20 feet. Collectively, the overall total above grade program area for both phases of the Project has been reduced by approximately 100,000 square feet.

Ground floor entries of the north and south towers have been refined and oriented to extend pedestrian activity along the major commercial streets. The hotel drop-off and entrance have been refined to provide greater pedestrian visibility, and to enhance access to interior public spaces. More direct pedestrian access has been provided to the MBTA Orange Line station, and sidewalk improvements are proposed to enhance the pedestrian environment. In addition, the creation of a landscaped, public park on the Keith Block and a major sidewalk widening at the Avery/Washington Street intersection will provide open space for area shoppers, tenants and residents.

A collaboration between an area artist and the Project architect has been initiated to enliven and animate special public areas within the Project. To meet the programmatic requirements of the Midtown Cultural District Zoning regulations, detailed plans of the daycare facility within the Proposed Project have been developed in conjunction with a qualified daycare consultant that meets the needs for infant, toddler and preschool care.

Mitigation:

Based on the urban design analysis of the Proposed Project as presented in the DPIR/DEIR, urban design improvements already included the following:

- Reinforcement of existing land use patterns within the Midtown Cultural District.

- Generous setbacks of the Project's taller massing elements minimizing adverse impacts on the Boston Common, the Washington Street corridor and historic buildings on, and adjacent to, the site.

- Provision of pedestrian through-block connections between Washington and Tremont Streets and Avery and Boylston Streets to reinforce the historic pattern of streets and alleyways.

- Improvements to the streetscape including stone sidewalk paving in and around the site, traditional scale sidewalk lighting, improved handicapped access to all public areas and clear and unobtrusive building graphics and signage.

- Reinforcement of important vistas down Washington Street from both the north and south by the presence of the Project's animated skyline.

Subsequent revisions made to the site and building design by the Project Proponent have responded to comments received from City and State agencies and public interest groups following the submission of the DPIR/DEIR. These revisions have resulted in the following mitigation measures included in the FPIR/FEIR:

- widening of the distance between towers,

- narrowing of the north tower elevation widths,

- smaller floor plates on the north tower,
- reduction in the south tower height,
- improved access to the Orange Line outbound station including provision for a location for the MBTA's handicapped elevator,
- proposed widening of sidewalks on Avery and Washington Streets, and
- provision of public open space on Avery Street.

The Project Proponent will continue to meet with the Boston Redevelopment Authority through the design and construction process to review and refine design details, materials and all design elements relevant to the public realm. The Project Proponent will commit to engage a local visual artist for a design collaboration involving specific areas of the Project's public spaces. In addition, the Project Proponent will continue to work with the appropriate State and City agencies to coordinate the design of transportation infrastructure and streetscape improvements on and around the Project site.

L. Historic Resources

Impacts:

Construction of the Proposed Project will involve the demolition of two non-historic buildings, one building categorized as Significant but which has been heavily altered, three buildings which have been categorized as Notable buildings which contribute to the character of the street but which are not individually significant, and the demolition and replacement of one building, the Evans House which has been petitioned for Boston Landmark status. The Project will retain and restore the Paramount Theater for theater use.

In response to comments received on the DPIR/DEIR, a feasibility study was undertaken that considered the rehabilitation and reuse potential of the Evans House. The study evaluated three alternatives. Due to the extent of the degradation of the structure and the primary facade on Tremont Street, the proponent's preferred alternative is to replace the existing building with new construction compatible with the scale and character of the Piano Row National Register Historic District. Design of this replacement building will be subject to the general standards and criteria of the Boston Landmarks Commission for an infill structure within this historic district, and the standards of the U.S. Secretary of the Interior.

Mitigation:

Through the site and building design of the Proposed Project, the Project Proponent has sought to mitigate the effects of large scale development within an area of historical and architectural importance. As indicated in both the Urban Design and

Historic Resources sections of the DPIR/DEIR, the Proposed Project design provides for the following:

- The design of the Proposed Project maintains and enhances the late 19th and early 20th century streetwall pattern and texture by building out to the property line, varying the heights of the various components of the project, using a variety of building materials, and varying the pattern of the design at the sidewalk level.

- The design of the bulk of the building area in two towers greatly minimizes the effects of shadow on historic resources.

- New construction over the Paramount Theater has been designed in order to maintain the appearance of the Theater from Washington Street as a "free standing" building without construction above.

The Project Proponent is committed to providing the following mitigation measures:

- The Paramount Theater restoration/rehabilitation will be accomplished in accordance with the Boston Landmarks Commission Standards and Criteria and the Secretary of Interior's Standards for rehabilitation thereby minimizing any adverse effects that the restoration process may have on the original fabric of the building.

- The potential adverse effects of the new construction on historic resources will be mitigated through careful monitoring of the existing buildings within the construction impact area for the duration of the demolition, excavation, and new construction and through the installation of protective coverings at critical points of the on-site and adjacent buildings. Methods of demolition, excavation, shoring, and construction will be selected to minimize the vibration and potential impact damage to the greatest extent possible.

In addition, based upon the findings of the Evans House feasibility study, and discussion of these findings with the Boston Landmarks Commission, the Massachusetts Historical Commission and the Boston Preservation Alliance, the Project Proponent proposes to provide a new structure in place of the existing building. Three options, as detailed in Chapter IV, Letter 10, Comment #2 of the FPIR/FEIR were studied and presented to the Boston Landmarks Commission on March 27, 1990. On the basis of this presentation the BLC has provided for an accelerated review of the Evans House to determine whether to building merits Landmark Designation. This review is scheduled for May 22, 1990.

M. Archaeology

Impacts:

The project area's archaeological sensitivity was determined by an assessment of its potential integrity as well as by its potential significance. Due to the location of historic districts and individual properties within and in close proximity to the project, the site was determined to be potentially significant. With the varying degree of disturbance to the area's archaeological record, however, the site was stratified into zones of relative archaeological sensitivity.

The assessment identified four (4) areas as possessing a high degree of archaeological sensitivity. These areas are located within passageways and alleyways that records indicate as having remained relatively unaffected by the destructive processes that have occurred elsewhere in the project area. The four areas include the alley running east of Tremont Street, south of 174-175 Tremont Street and its north-south extension; the western half of the T-shaped termination of Avery Place; Mason Street Place; and Fayette Court.

Since submission of the DPIR/DEIR, the proponent has undertaken archaeological monitoring of the Evans House and has examined current utility maps pertaining to Avery Place, Mason Street Place and Fayette Court. Monitoring observations from the Evans House revealed a series of disturbances to the natural strata caused by the building of previously undocumented brick vaults, as well as utility lines and the construction of the Evans House itself. Similar evidence of site disturbances have been revealed by test pits and boring studies in all the previously identified areas except Avery Place.

Mitigation:

Based on the evidence of site disturbance in several of the previously identified areas of archeological sensitivity, the list of sensitive areas has been limited to Avery Place. The Project Proponent will conduct monitoring of test pits in this location prior to the construction on or immediately adjacent to this area. Based on findings from this monitoring program, additional archeological investigation may be indicated. Findings will be submitted to the Boston Landmarks Commission and the Massachusetts Historical Commission. For determination of any subsequent action required for this location.

N. Infrastructure

Impacts:

Energy

As described in the DPIR/DEIR, the existing electrical and telecommunications systems have been found to have adequate capacity to serve the Proposed Project. Boston Gas has indicated that their existing system has sufficient capacity to service anticipated loads for Phase I of the Project. Providing service for the complete buildout of the Midtown Cultural District may require upgrades to some of the existing systems.

Water and Sewer Service

As described in the DPIR/DEIR, the demands on the region-wide water and sewer systems created by the Proposed Project are insignificant when compared to the overall operation levels of either system. In addition, the local systems have been found to have sufficient excess capacity to accommodate the Proposed Project as well as other developments within the area.

In response to comments received on the DPIR/DEIR, the Proponent has met with the Boston Water and Sewer Commission (BWSC) to discuss possible plans for storm and sanitary sewer system improvements. No improvements are necessary or planned at the current moment as part of the Proposed Project. The Proponent has, however, stated their intent to continue working with the BWSC to develop a sewer infrastructure improvement plan for the area.

In response to Comments received on the FPIR/FEIR, it has been determined that currently there are no know problems with the 12" combined sewer in Avery Street during wet weather flows. While the Proposed Project will cause an increase in the flow to this line under the preliminary routing of the sanitary and storm lines the moderate increase is not anticipated to exacerbate the situation.

Mitigation:

Energy

Upgrading of the various existing network systems to service new developments is common practice among privately held utilities. If such improvements are required in the future, the private utilities would typically perform cost/benefit analyses based upon the needs of each development. If the analyses prove that the benefits gained (increased revenues and higher system efficiency), do not sufficiently balance the associated costs, a portion of these costs may be assigned to the project or projects that necessitate system improvements.

The Project Proponent does not anticipate that major infrastructure improvements will necessitate this situation, however, to reduce the level of demand generated by the Proposed Project, the Project Proponent will provide:

- Insulation of wall areas with an average R value of approximately 13.
- Insulation of roof and exposed floor areas over unheated space will have an average R value of 17.
- Use of double glazed windows.
- Use of electric centrifugal machine at 0.60 to 0.73 KW/ton electrical input.

- Use of fan-powered "variable air volume" heating and cooling systems to provide local climate control in demand for exterior zones and variable volume system for all interior zones.
- Use of "variable inlet" controls for all primary air conditioning units in order to directly match to directly match local heating and cooling demands.
- Use of high-efficiency motors to drive all mechanical equipment.
- Design of lighting system which utilizes energy-efficient lamps and ballast.
- Insulation of all chilled water system components.
- Insulation of all hot water system components.

In addition, based on the cost/benefit analyses performed by the utility companies for upgrading existing networks to provide sufficient capacity for the Proposed Project, the Project Proponent will assume a fair portion of the upgrading costs allocated to new developments as deemed necessary. No further mitigation is proposed.

Water and Sewer

Based on the results of the analysis in the DPIR/DEIR and subsequent discussions with the Boston Water and Sewer Commission (BWSC), the Project Proponent will:

- Provide separate storm and sanitary sewers within the Project site. The connection of new proposed sanitary sewer and storm sewer to the existing combined sewer will not cause problems during wet weather.
- Install state approved water saving fixtures (sink faucets, shower heads, water closets), that will reduce water usage and sewage generation by an estimated 20-25 percent, commit to continue working with BWSC to develop a sewer infrastructure improvement plan for the area.
- Use of water efficient plantings in landscaping with minimum turf areas.
- Use of water saving techniques and equipment for kitchen, cafeteria and laundry area.
- Provision for an MWRA approved gas/oil separator for the parking facility.

APPENDIX C

List of Meetings With Transportation-Related Agencies

Commonwealth Center - Boston
Summary of Transportation Meetings

Group:

Midtown Development Coalition

Meeting Dates:

December 16, 1988
January 19, 1989
April 7, 1989
September 7, 1989

Attendees:

Alexander Twining	F.D. Rich
Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Bob Greene	Metropolitan Structures
Paul Chan	Metropolitan Structures
Leonard McQuarrie	Campeau Massachusetts
Carl Geupel	Campeau Massachusetts
Nancyellen Hayes	Campeau Massachusetts

Group:

Boston Transportation Department

Meeting Dates:

July 17, 1988

Issue: Clarify traffic section of BRA's scope for DPIR.

Attendees:

Howard Kielley	F.D. Rich
Andy McClurg	BTD
Dave Roberts	BRA
Paul Reavis	BRA
Larry Koff	BRA
Dan Beagan	Sasaki Associates

September 14, 1988

Issue: Implementation of a west bound street connection from South Station to Tremont Street.

Attendees:

Alexander Twining	F.D. Rich
Gordon Hislop	F.D. Rich

Richard Dimino	BTD
Andy McClurg	BTD
Chin-Hsin Shao	BTD
Buzz Constable	A.W. Perry

November 30, 1988

Attendees:

Ed Hesford	BTD
Gordon Hislop	F.D. Rich
Dave Roberts	BRA
Pam Wessling	BRA
Bob Green	Metropolitan Structure
Paul Chan	Metropolitan Structure
Patty McMahon	Neighborhood Services
Amy Keith	BW&S
Paul Keeley	BFD
Dennis Peri	Boston Gas
David Carlson	BRA
Joe Kelly	RPD
Doug Medina	Cablevision
Axel Kaufmann	Jung/Brannen
Peter Greulich	Survey Engineers
Rock Eisenheim	Survey Engineers
Yu Sing Jung	Jung/Brannen
Pam Wessling	BRA
Thomas Maistros	BRA

March 22, 1989

Issue: Transportation Liaison Committee DPIR Issues

Attendees:

Gordon Hislop	F.D. Rich
Andy McClurg	BTD
Bob Drummond	BTD
George Hatzopoulos	Boston Gas Co.
Kevin Doherty	Boston Gas Co.
Thomas Quinn	Boston Fire Dept.
Dave Roberts	BRA
Gordon Barnes	BPWD
Steve Goldberg	Turner Const.
Joe Kelly	RPD
Patty McMahon	Neighborhood Services
Amy Keith	BWSC

June 27, 1989

Issue: Midtown Cultural District Development Transportation Liaison Committee

Attendees:

Alexander Twining	F.D. Rich
Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Dave Roberts	BRA
Buzz Constable	A.W. Perry

August 24, 1989

Issue: BRA Adequacy Determination traffic issues.

Attendees:

Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Andy McClurg	BTD
Dave Roberts	BRA
Dick Mertens	BRA
Dan Beagan	Sasaki Associates

August 30, 1989

Issue: BRA/BTD traffic issues for FPIR.

Attendees:

Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Andy McClurg	BTD
Dave Roberts	BRA
Dick Mertens	BRA

September 11, 1989

Issue: Realignment of Hayward Place and Avery Street.

Attendees:

Alexander Twining	F.D. Rich
Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Andy McClurg	BTD
Bob Drummond	BTD
Chin-Hsin Shao	BTD
Dan Beagan	Sasaki Associates

April 20, 1990

Issue: SFEIR Comments

Attendees:

Alexander Twining	F.D. Rich
Janet McCabe	MEPA
Jacki Wilkins	MEPA
Andy McClurg	BTD
Pam Wessling	BRA
Dave Roberts	BRA
Paul Kohane	BW&S
Katina Belezos	MWRA

MBTA

Meeting Dates:

April 12, 1989

Issue: BRA/MBTA interests re Essex Statio

Attendees:

George Smith	MBTA
Joe Beaton	MBTA
Joyce Rawlings	MBTA
Virginia Scharfenberg	MBTA
Bill Whitney	BRA
Ted Chandler	BRA
Dave Roberts	BRA

May 19, 1989

Attendees:

Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Barbara Pizzi	MBTA
Esther Maletz	MBTA
Joyce Rawlings	MBTA
Charles Steward	MBTA
Mary Ellen Boyle	MBTA
Jack Kessler	Gaston & Snow
Dave Roberts	BRA
Shirley Muirhead	BRA

May 25, 1989 Issue: Chinatown (Essex) Station

Attendees:

George Smith	MBTA
Barbara Pizzi	MBTA
J. Williams	MBTA
Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
Michael Novak	Jung Brannen
Dave Roberts	BRA
Shirley Muirhead	BRA

July 20, 1989 Attendees:

Alexander Twining	F.D. Rich
Gordon Hislop	F.D. Rich
Howard Kielley	F.D. Rich
George Hines	MBTA
Jack Wright	MBTA
Mark Nagle	CBT
Robert Ravelli	CBT
Bill Gallagher	URS
Marc Cutler	URS

September 27, 1989 Issue: BRA Orange Line Accessibility

Gordon Hislop	F.D. Rich
Bob McCarthy	MBTA
Dave Roberts	BRA
Michael Novak	Jung Brannen
Joe Glosky	Jung Brannen

Group:

BAPCC

October 12, 1989 Issue: Application to BAPCC for Parking Freeze Permit.

October, 1989 Issue: BAPCC hearing scheduled for 12/7/89.

November, 1989 Issue: BAPCC hearing delay to allow for completion of FPIR/FEIR comments. D. Brietenecher to confirm hearing date and time.

APPENDIX D

Technical Data

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1985 HCM - CHAPTER 9: SIGNALIZED
TREMONT STREET/BOYLSTON STREET
AM PEAK HOUR  1996 BUILD CONDITIONS  PROPOSED PROJECT  WITH MITIGATION
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=TRBOBDAM   GEOMETRICS=TREMBMIT   SIGNAL=TREMBOYL
LOCATED IN CBD:N
VOLUME & GEOMETRICS
             VOLUMES      # OF LANES     LANE WIDTH     CROSS
DIR  LT   TH   RT TOTAL   LT TH RT      LT   TH   RT    WALK
EB    0 1001  213  1214    0  2  1     0.0 12.0 12.0    48
WB    0    0    0     0    0  0  0     0.0  0.0  0.0     0
NB    0    0    0     0    0  0  0     0.0  0.0  0.0     0
SB  731  844  496  2071    1  2  1    12.0 12.0 12.0    48

TOTAL VOLUME =  3285

TRAFFIC & ROADWAY CONDITIONS
                ADJ PARK              PEDESTRIANS        ARR
DIR GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  0.0%  3.0%   N     2    0    .900   50    Y    19.0    3
WB  0.0%  0.0%         0    0    .000    0    Y    19.0    0
NB  0.0%  0.0%         0    0    .000    0    Y    14.0    0
SB  0.0%  8.0%   N     0    0    .900   50    Y    14.0    3

PHASINGS
    EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
    l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 1     *  *                                   *  *  36.8   5    A
 2                                      *  *  *     55.2   5    A
 3           *           *           *           *   0.0  18    A

CYCLE=120.0  LOST=28.0  SUM V/S CRIT= 0.82 TOTAL V/C= 1.07

LEVEL OF SERVICE WORKSHEET
DIR L GRP  SAT  v/c CM g/C     C     d1    c      d2   PF   Delay LOS Avg Q  95%

EB  T     1800 1.07 * 0.31 120.0  32.68 1088   38.62 0.85   60.61  F  37.2
EB  R     1800 0.51   0.31 120.0  26.01  462    0.15 0.85   22.23  C   5.5
SB  L     1800 1.07 * 0.46 120.0  26.27  756   42.59 1.00   68.87  F  27.5
SB  T     1800 0.62   0.46 120.0  18.58 1592    0.54 0.85   16.25  C  16.9
SB  R     1800 0.46   0.81 120.0   2.68 1189    0.00 0.85    2.28  A   3.5

DIR Delay LOS
EB  54.14  E
SB  31.17  D
INTERSECTION DELAY = 39.77 INTERSECTION LOS=D
```

```
1985 HCM    CHAPTER 9:  SIGNALIZED
TREMONT STREET/BOYLSTON STREET
PM PEAK HOUR  1996 BUILD CONDITIONS  PROPOSED PROJECT  WITH MITIGATION
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=TRBOBDPM   GEOMETRICS=trembmit   SIGNAL=tremboy1
LOCATED IN CBD:N
VOLUME & GEOMETRICS
                VOLUMES         # OF LANES      LANE WIDTH      CROSS
DIR  LT    TH    RT  TOTAL    LT TH RT       LT   TH   RT       WALK
EB    0   905   263   1168     0  2  1      0.0 12.0 12.0       48
WB    0     0     0      0     0  0  0      0.0  0.0  0.0        0
NB    0     0     0      0     0  0  0      0.0  0.0  0.0        0
SB  547  1775   893   3215     0  3  1      0.0 12.0 12.0       48

TOTAL VOLUME =  4383

TRAFFIC & ROADWAY CONDITIONS
                    ADJ PARK                PEDESTRIANS           ARR
DIR GRADE %HV    Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB   0.0%  3.0%   N      2     0   .900   50   Y     19.0     3
WB   0.0%  0.0%          0     0   .000    0   Y     19.0     0
NB   0.0%  0.0%          0     0   .000    0   Y     14.0     0
SB   0.0%  8.0%   N      0     0   .900   50   Y     14.0     3

PHASINGS
    EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
    l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 1     x  x                                   x  x  33.5   5     A
 2                                      x  x  x     61.6   5     A
 3           x           x           x           x   0.0  15     A

CYCLE=120.0  LOST=24.9  SUM V/S CRIT= 0.84 TOTAL V/C= 1.07

LEVEL OF SERVICE WORKSHEET
DIR L GRP  SAT  v/c CM g/C     C      d1    r       d2   PF   Delay LOS Avg Q  95%

EB  T      1800 1.07 * 0.28 120.0  33.71  991   37.26 0.85   60.33  F  34.0
EB  R      1800 0.69   0.28 120.0  29.37  421    4.01 0.85   28.37  D   7.0
SB  L T    1800 1.07 * 0.51 120.0  23.85 2664   29.49 0.85   45.34  E  63.2
SB  R      1800 0.81   0.83 120.0   3.85 1227    3.45 0.85    6.21  B   5.5

DIR Delay LOS
EB  53.40  E
SB  35.20  D
INTERSECTION DELAY = 39.94 INTERSECTION LOS=D
```

```
1985 HCM - CHAPTER 9: SIGNALIZED
TREMONT STREET/BOYLSTON STREET
AM PEAK HOUR  1996 BUILD CONDITIONS  PROPOSED PROJECT  WITH MITIGATION
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=trbobdam   GEOMETRICS=trembmit   SIGNAL=tremboyl
LOCATED IN CBD:N
VOLUME & GEOMETRICS
              VOLUMES        # OF LANES      LANE WIDTH       CROSS
DIR  LT   TH    RT  TOTAL  LT TH RT      LT   TH   RT      WALK
EB    0 1001   213   1214   0  2  1     0.0 12.0 12.0       48
WB    0    0     0      0   0  0  0     0.0  0.0  0.0        0
NB    0    0     0      0   0  0  0     0.0  0.0  0.0        0
SB  731  844   496   2071   1  2  1    12.0 12.0 12.0       48

TOTAL VOLUME =  3285

TRAFFIC & ROADWAY CONDITIONS
                  ADJ PARK                 PEDESTRIANS         ARR
DIR GRADE %HV    Y/N MOVES BUSES  PHF  CROSS BUT MIN TIME  TYPE
EB  0.0%  3.0%    N     2    0    .900   50   Y    19.0      3
WB  0.0%  0.0%          0    0    .000    0   Y    19.0      0
NB  0.0%  0.0%          0    0    .000    0   Y    14.0      0
SB  0.0%  0.0%    N     0    0    .900   50   Y    14.0      3

PHASINGS
   EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
   l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
1     x  x                                   x  x   25.6   5    A
2                                      x  x  x      38.4   5    A
3           x           x           x           x    0.0  46    A

CYCLE=120.0  LOST=56.0  SUM V/S CRIT= 0.82 TOTAL V/C= 1.54

LEVEL OF SERVICE WORKSHEET
DIR L GRP  SAT  v/c CM g/C     C     d1     c     d2   PF   Delay LOS Avg Q  95%

EB  T     1800 1.54 * 0.21 120.0  42.07  757  194.86 0.85  201.40  F   95.5
EB  R     1800 0.74   0.21 120.0  33.48  322    7.14 0.85   34.52  D    6.2
SB  L     1800 1.54 * 0.32 120.0  41.67  526  197.69 1.00  239.36  F   79.4
SB  T     1800 0.89   0.32 120.0  29.47 1108    7.34 0.85   31.29  D   21.3
SB  R     1800 0.65   0.58 120.0  13.17  846    1.41 0.85   12.39  B    7.8

DIR Delay LOS
EB 173.28  F
SB  98.83  F
INTERSECTION DELAY =126.69 INTERSECTION LOS=F
```

```
1985 HCM - CHAPTER 9: SIGNALIZED
TREMONT STREET/BOYLSTON STREET
PM PEAK HOUR  1996 BUILD CONDITIONS  PROPOSED PROJECT  WITH MITIGATION
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=TRBOBDPM   GEOMETRICS=trembmit   SIGNAL=tremboy1
LOCATED IN CBD:N
VOLUME & GEOMETRICS
              VOLUMES          # OF LANES      LANE WIDTH      CROSS
DIR  LT    TH    RT  TOTAL   LT TH RT       LT    TH    RT     WALK
EB    0   905   263   1168    0  2  1      0.0  12.0  12.0     48
WB    0     0     0      0    0  0  0      0.0   0.0   0.0      0
NB    0     0     0      0    0  0  0      0.0   0.0   0.0      0
SB  547  1775   893   3215    0  3  1      0.0  12.0  12.0     48

TOTAL VOLUME =   4383

TRAFFIC & ROADWAY CONDITIONS
                   ADJ PARK                 PEDESTRIANS           ARR
DIR GRADE  %HV    Y/N MOVES BUSES   PHF  CROSS BUT MIN TIME TYPE
EB  0.0%  3.0%    N     2     0    .900   50    Y     19.0     3
WB  0.0%  0.0%          0     0    .000    0    Y     19.0     0
NB  0.0%  0.0%          0     0    .000    0    Y     14.0     0
SB  0.0%  8.0%    N     0     0    .900   50    Y     14.0     3

PHASINGS
    EASTBOUND   WESTBOUND   NORTHBOUND   SOUTHBOUND GREEN  Y+R PRE/ACT
    l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 1     *  *                                   *  *   25.4   5     A
 2                                      *  *  *      46.6   5     A
 3           *           *           *           *    0.0  38     A

CYCLE=120.0  LOST=48.0  SUM V/S CRIT= 0.84 TOTAL V/C= 1.41

LEVEL OF SERVICE WORKSHEET
DIR L GRP  SAT  v/c CM g/C     C      d1    c      d2   PF   Delay LOS Avg Q  95%

EB  L       1800 1.41 * 0.21 120.0  40.36  750  148.65 0.85  160.66  F  71.6
EB  R       1800 0.92   0.21 120.0  35.16  319   23.73 0.85   50.06  E   9.1
SB  L-T     1800 1.41 * 0.39 120.0  37.61 2017  143.85 0.85  154.25  F 170.0
SB  R       1800 1.05   0.64 120.0  17.99  944   34.08 0.85   44.26  E  21.8

DIR Delay LOS
EB 136.68  F
SB 125.75  F
INTERSECTION DELAY =128.60 INTERSECTION LOS=F
```

```
SASAKI ASSOCIATES INC.    USING CINCH (VER 2.1) BY SASAKI ASSOCIATES, INC.                  04-24-1990  10:09:09
PROJECT NAME: COMMONWEALTH CENTER SPEIR  PROJECT NUMBER: 8570.05  BY: SHR

1985 HCM - CHAPTER 9: SIGNALIZED
BOYLSTON ST/CHARLES ST
AM PEAK HOUR  1996 BUILD CONDITIONS  PROPOSED PROJECT  50% REDISTRIB FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=CHBOBDAM   GEOMETRICS=CHASBOYL   SIGNAL=CHASBOYL
LOCATED IN CBD:N
VOLUME & GEOMETRICS
              VOLUMES          # OF LANES       LANE WIDTH      CROSS
DIR  LT    TH    RT  TOTAL  LT TH RT        LT    TH    RT     WALK
EB   95[illegible]   915     0  1869    2  2  0     15.0  15.0   0.0     60
WB     0     0   501   501    0  0  1      0.0   0.0  15.0      0
NB     0   854   223  1077    0  2  1      0.0  13.0  13.0     40
SB     0     0     0     0    0  0  0      0.0   0.0   0.0     48

TOTAL VOLUME =  34[illegible]

TRAFFIC & ROADWAY CONDITIONS
                     ADJ PARK                   PEDESTRIANS           ARR
DIR GRADE %HV   ADJ MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  [illegible]  [illegible]   [illegible]   [illegible]   [illegible]   .900  150   Y    17.0    4
WB  [illegible]  [illegible]   [illegible]   0   0   .900  150   Y    17.0    4
NB  [illegible]  [illegible]   [illegible]   [illegible]   [illegible]   .900  100   Y    19.0    4
SB  [illegible]  [illegible]         [illegible]   0   .900  100   Y    19.0    0

PHASINGS
    EASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN  Y+R PRE/ACT
    l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
[illegible]            +           +        +  +                      24.8    5     A
[illegible]   +                    +                +                 28.2    5     A
               -           +             +                  +    0.0   12     A

[illegible] SUM V/S CRIT= [illegible] TOTAL V/C= [illegible]

LEVEL OF SERVICE WORKSHEET
[illegible]                                        d2   PF   Delay LOS [illegible]

[illegible]               [illegible]   [illegible]   [illegible]   [illegible]  1351   [illegible] 1.00   13.59  [illegible]  14.4    44
[illegible]               [illegible]   [illegible]   [illegible]  15.62 1304   [illegible] [illegible]   12.54  B  [illegible]  [illegible]
[illegible]  R            [illegible]   [illegible]  [illegible]  75.0   2.27 1252   [illegible] 0.62    1.17  A    [illegible]    [illegible]
[illegible]               [illegible]   [illegible]   [illegible]  17.55 1211   [illegible] [illegible]   15.46  C  13.2    [illegible]
[illegible]               [illegible]   [illegible]   [illegible]  15.58  455   0.55 0.62   10.02  B   3.5    11

[illegible]

INTERSECTION [illegible] = [illegible] INTERSECTION LOS=B
```

```
SASAKI ASSOCIATES INC.    USING CINCH (VER 2.1) BY SASAKI ASSOCIATES, INC.                    04-24-1990  10:12:34
PROJECT NAME: COMMONWEALTH CENTER SFEIR  PROJECT NUMBER: 8570.05  BY: SHR

1985 HCM - CHAPTER 9: SIGNALIZED
BOYLSTON ST/CHARLES ST
PM PEAK HOUR  1996 BUILD CONDITIONS  PROPOSED PROJECT  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=CHBOBDPM   GEOMETRICS=CHASBOYL   SIGNAL=CHASBOYL
LOCATED IN CBD:N
VOLUME & GEOMETRICS
              VOLUME          # OF LANES      LANE WIDTH      CROSS
DIR  LT   TH   RT  TOTAL  LT TH RT      LT   TH   RT     WALK
EB  902  931    0  1633    2  2  0    15.0 15.0  0.0     60
WB    0    0  623   623    0  0  1     0.0  0.0 15.0      0
NB    0 1090  198  1288    0  2  1     0.0 13.0 13.0     40
SB    0    0    0     0    0  0  0     0.0  0.0  0.0     48

TOTAL VOLUME =  3544

TRAFFIC & ROADWAY CONDITIONS
                ADJ PARK              PEDESTRIANS          ARR
DIR GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  0.0%  3.0%   N     0    0   .900  150   Y    17.0     4
WB  0.0%  3.0%   N     0    0   .900  150   Y    17.0     4
NB  0.0%  3.0%   N     0    0   .900  150   Y    19.0     4
SB  0.0%  3.0%   N     0    0   .900  150   Y    19.0     0

PHASINGS
    EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
    l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 1           *           *        *  *                36.7   5    A
 2  *  *                 *              *             31.3   5    A
 3           *              *           *        *     0.0  12    A

CYCLE= 90.0  LOST=22.0  SUM V/S CRIT= 0.64 TOTAL V/C= 0.85

LEVEL OF SERVICE WORKSHEET
[illegible]                                     d1    PF   Delay LOS [illegible]

EB  L    [illegible]            21.60 1247   4.51 1.00   25.11  D  17.3   5.
EB  T    [illegible]          + 20.67 1277   4.65 0.73   16.48  C  16.[illegible]  5.
WB  R    [illegible]     0.31     2.09 1945   0.06 0.62    1.34  A   3.2  11
NB  T    [illegible]   + 0.41    16.35 1496   4.01 0.73   16.32  C  17.9  58
NB  R    [illegible]     0.41 90.0 14.26  562   0.00 0.62    8.84  B   3.3  [illegible]

DIR Delay LOS
EB   21.74  C
WB    1.34  A
NB   16.22  C
INTERSECTION DELAY = 16.22 INTERSECTION LOS=C
```

```
1985 HCM - CHAPTER 9: SIGNALIZED
TREMONT STREET/BOYLSTON STREET
AM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  WITH MITIG  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=TRBOEDAM   GEOMETRICS=TREMBMIT   SIGNAL=TREMBOYL
LOCATED IN CBD:N
VOLUME & GEOMETRICS
           VOLUMES        # OF LANES      LANE WIDTH     CROSS
DIR  LT   TH   RT  TOTAL  LT TH RT      LT   TH   RT     WALK
EB    0  910  213  1123    0  2  1     0.0 12.0 12.0     48
WB    0    0    0     0    0  0  0     0.0  0.0  0.0      0
NB    0    0    0     0    0  0  0     0.0  0.0  0.0      0
SB  622  844  496  2162    1  2  1    12.0 12.0 12.0     48

TOTAL VOLUME = 3285

TRAFFIC & ROADWAY CONDITIONS
               ADJ P-R              PEDESTRIANS          ARR
DIR GRADE %HV    Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  0.0%  [illegible]       0     0  .900   50   Y    15.0    3
WB  0.0%  0.0%              0     0  .000    0   Y    19.0    0
NB  0.0%  0.0%              0     0  .000    0   Y    14.0    0
SB  0.0%  [illegible]       0     0  .900   50   Y    14.0    3

PHASINGS
   EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
   L  T  R  P  L  T  R  P  L  T  R  P  L  T  R  P
1     *  *                                   *  *   34.3   5    A
2                                      *  *  *      63.7   5    A
3           *           *           *           *    0.0  12    A

CYCLE [illegible] SUM V/S CRIT= 0.85 TOTAL V/C= 1.05

LEVEL OF SERVICE WORKSHEET
[illegible]                                  d1          d2   PF   Delay LOS [illegible]

EB  T   [illegible]                    [illegible] 1014   32.19 0.85   35.97  D  [illegible]
EB  R   [illegible]                    [illegible]  421    0.69 0.85   24.03  C   5.[illegible]
SB  L   [illegible]                    12.55  573   23.87 1.00   56.47  E  25.[illegible]
SB  T   [illegible]                    [illegible] 1917    0.12 0.85   12.07  B  14.[illegible]
SB  R   [illegible]                     1.46 1263    0.00 0.85    1.24  A   1.8  [illegible]

[illegible]
[illegible]
[illegible]
TOTAL [illegible] = 24.[illegible] INTERSECTION LOS=D
```

```
SASAKI ASSOCIATES INC.   USING CINCH (VER 2.1) BY SASAKI ASSOCIATES, INC.          04-24-1990  10:22:32
PROJECT NAME: COMMONWEALTH CENTER SFEIR  PROJECT NUMBER: 8570.05  BY: SHR

1985 HCM - CHAPTER 9: SIGNALIZED
TREMONT STREET/BOYLSTON STREET
PM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  MITIGATED  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=TRBOBDPM   GEOMETRICS=TREMBMIT   SIGNAL=TREMBOYL
LOCATED IN CBD:N
VOLUME & GEOMETRICS
              VOLUMES         # OF LANES       LANE WIDTH      CROSS
DIR  LT   TH   RT  TOTAL  LT TH RT        LT   TH   RT      WALK
EB     0  849  263  1112    0  2  1       0.0 12.0 12.0      48
WB     0    0    0     0    0  0  0       0.0  0.0  0.0       0
NB     0    0    0     0    0  0  0       0.0  0.0  0.0       0
SB   603 1775  893  3271    0  3  1       0.0 12.0 12.0      48

TOTAL VOLUME =  4383

TRAFFIC & ROADWAY CONDITIONS
                  ADJ PARK                 PEDESTRIANS          ARR
DIR GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  0.0%  2.0%   N     0     0  .900   50   Y     19.0    3
WB  0.0%  0.0%         0     0  .000    0   Y     19.0    0
NB  0.0%  0.0%         0     0  .000    0   Y     14.0    0
SB  1.0%  2.0%   N     0     0  .900   50   Y     14.0    3

PHASINGS
   EASTBOUND  WESTBOUND  NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
   L  T  R  P  L  T  R  P  L  T  R  P  L  T  R  P
1     *  *                                   *  *  22.6   5    A
2                                         *  *  *     65.4   5    A
3           *           *           *           *   0.0  12    A

[illegible] C=120 [illegible] V/S CRIT= 0.84 TOTAL V/C= 1.03

LEVEL OF SERVICE WORKSHEET
[illegible]                                                     Dela [illegible]

EB  T    [illegible]      [illegible]  [illegible] 22.11 0.85   52.41  E  [illegible]
EB  R    [illegible]      [illegible]  416    4.73 0.85   29.57  D   7.0 [illegible]
SB  L+T  [illegible] - 0.84 120.0 11.46 2328   18.91 0.85   34.92  D  52.5 [illegible]
SB  R    [illegible]   0.30 120.0  2.81 1267    2.92 0.85    4.73  A   4.7 [illegible]

APP Delay LOS
EB  47.11  E
SB  [illegible]  D
INTERSECTION DELAY = [illegible] INTERSECTION LOS=D
```

```
1985 HCM - CHAPTER 9: SIGNALIZED
TREMONT STREET/AVERY STREET  AVERY STREET ONE-WAY WB
AM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=NUTRBDAM   GEOMETRICS=NUTREMAV   SIGNAL=NUTREMAV
LOCATED IN CBD:N
VOLUME & GEOMETRICS
             VOLUMES          # OF LANES       LANE WIDTH       CROSS
DIR  LT    TH    RT  TOTAL  LT TH RT        LT    TH    RT     WALK
EB    0     0     0      0   0  0  0       0.0   0.0   0.0      0
WB  605     0     0    605   2  0  0      12.0   0.0   0.0     35
NB    0     0     0      0   0  0  0       0.0   0.0   0.0      0
SB    0  1616     0   1616   0  4  0       0.0  12.0   0.0     48

TOTAL VOLUME = 2221

TRAFFIC & ROADWAY CONDITIONS
                      ADJ PARK                  PEDESTRIAN          ARR
DIR GRADE %HV       Y/N MOVES BUSES   PHF  CROSS BUT MIN TIME TYPE
EB   0.0%  0.00            0     0    .000    0         10.8     0
WB   0.0%  1.00  [illegible]  0     0    .850  476   N     10.8     4
NB   0.0%  0.00            0     0    .000  110   N     14.0     0
SB   0.0%  1.00  [illegible]  0     0    .850  114   N     14.0     3

PHASINGS
    EASTBOUND    WESTBOUND     NORTHBOUND   SOUTHBOUND GREEN  Y+R  PRE/ACT
   L  T  R  P   L  T  R  P   L  T  R  P   L  T  R  P
                          [illegible]                      28.5    5    P
                                                  [illegible]  21.7    5    P

CYCLE= [illegible] LOST=[illegible] SUM V/S CRIT= 0.52 TOTAL V/C= 0.63

LEVEL OF SERVICE WORKSHEET
[illegible]   d1   c   d2   PF   Delay LOS [illegible]

[illegible]  0.84 [illegible]  0.80 1.00   12.34  B [illegible]
[illegible]  .00 [illegible]   29 1.00    5.31  B [illegible]

[illegible]

INTERSECTION DELAY = [illegible].24 INTERSECTION LOS=B
```

1985 HCM - CHAPTER 9: SIGNALIZED

```
TREMONT STREET/AVERY STREET  AVERY STREET ONE-WAY WB
PM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=NUTRBDPM   GEOMETRICS=NUTREMAV   SIGNAL=NUTREMAV
LOCATED IN CBD:N
```

VOLUME & GEOMETRICS

```
             VOLUMES          # OF LANES      LANE WIDTH      CROSS
DIR  LT   TH   RT  TOTAL   LT TH RT      LT    TH    RT     WALK
EB    0    0    0     0     0  0  0      0.0   0.0   0.0      0
WB  881    0    0   881     2  0  0     12.0   0.0   0.0     35
NB    0    0    0     0     0  0  0      0.0   0.0   0.0      0
SB    0 2390    0  2390     0  4  0      0.0  12.0   0.0     48

TOTAL VOLUME =  3271
```

TRAFFIC & ROADWAY CONDITIONS

```
                      ADJ PARK                    PEDESTRIANS         ARR
DIR GRADE %HV     Y,N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  0.0%  0.0%           0     0  .000    0         10.8     0
WB  0.0%  1.0%   Y       0     0  .850  476   N     10.8     4
NB  0.0%  0.0%           0     0  .000  110   N     14.0     0
SB  0.0%  5.0%   N       0     6  .850  114   N     14.0     3
```

PHASINGS

```
   EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
   l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
1                       *              *          28.5   5    P
2              *                             *    21.5   5    P

CYCLE= 60.0 LOST=10.0 SUM(V/S)CRIT= 0.77 TOTAL V/C= 0.92
```

LEVEL OF SERVICE WORKSHEET

```
DIR L GRP SAT   V/C  g/C   C     d1    c      d2   PF    Delay LOS Avg Q  95%

WB  L   [illegible]  [illegible] C.[illegible] 14.[illegible] 117[illegible]  0.45 1.00  21.81  [illegible]
SB  T   [illegible]  0.81 0.48  60.0  11.18 3352   3.94 1.00  15.12  C  27.6  [illegible]4

DIR Delay LOS
WB  21.81  C
SB  15.12  C
INTERSECTION DELAY = 17.11 INTERSECTION LOS=C
```

```
1985 HCM - CHAPTER 9: SIGNALIZED
WASHINGTON STREET AT REALIGNED HAYWARD PLACE/AVERY STREET
AM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED:
VOLUME=NUWABDAM    GEOMETRICS=NUWASHAV    SIGNAL=NUWASHAV
LOCATED IN CBD:N
VOLUME & GEOMETRICS
             VOLUMES          # OF LANES       LANE WIDTH      CROSS
DIR   LT    TH    RT  TOTAL  LT TH RT        LT    TH    RT    WALK
EB     0     0     0     0    0  0  0       0.0   0.0   0.0     25
WB     0   223    75   298    0  2  0       0.0  12.0   0.0     25
NB [illegible]   373     0   755    1  1  0      12.0  12.0   0.0     35
SB     0     0     0     0    0  0  0       0.0   0.0   0.0     35

TOTAL VOLUME =  1053

TRAFFIC & ROADWAY CONDITIONS
                NET PARK                  PEDESTRIANS          ARR
DIR GRADE %HV   ADJ PKG BUSES  PHF CROSS BUT MIN TIME TYPE
EB   0.0%  0.0%  N      0     0  .900  200   N    13.3    0
WB   0.0%  2.0%  N      0     0  .850  200   N    13.3    3
NB   0.0%  2.0%  N      0     0  .950  200   N    15.8    4
SB   0.0%  0.0%  N      0     0  .900  200   N    15.8    0

PHASINGS
  EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
  l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
                          *  *  *                  24.5    5    A
                 *  *              *                10.1    5    A
           *           *           *           *    0.0   15    A

[illegible] TOTAL V/C= 0.64

LEVEL OF SERVICE WORKSHEET
[illegible]

[illegible]  17.83  575   [illegible] 0.55   16.51  [illegible]
[illegible]  [illegible]  70[illegible]  1.5[illegible] 1.0[illegible]  11.1[illegible]  [illegible]  1[illegible]
[illegible]  10.14  740   0.65 0.62    6.92  [illegible]  14

[illegible] = [illegible] INTERSECTION LOS=B
```

```
1985 HCM - CHAPTER 9: SIGNALIZED
WASHINGTON STREET AT REALIGNED HAYWARD PLACE/AVERY STREET
PM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=NUWABDPM   GEOMETRICS=NUWASHAV   SIGNAL=NUWASHAV
LOCATED IN CBD:N
VOLUME & GEOMETRICS
              VOLUME:          # OF LANES      LANE WIDTH      CROSS
DIR  LT   TH   RT  TOTAL   LT TH RT      LT   TH   RT      WALK
EB    0    0    0     0     0  0  0      0.0  0.0  0.0      25
WB    0  292  194   486     0  2  0      0.0 12.0  0.0      25
NB  589   50    0   639     1  1  0     12.0 12.0  0.0      35
SB    0    0    0     0     0  0  0      0.0  0.0  0.0      35

TOTAL VOLUME =  1125

TRAFFIC & ROADWAY CONDITIONS
                    ADJ PARK                  PEDESTRIANS        ARR
DIR GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  0.0%  0.0%   N     0     0   .000  200    N    13.2     0
WB  0.0%  2.0%   N     0     0   .850  200    N    13.3     3
NB  0.0%  2.0%   N     0     0   .850  200    N    15.8     4
SB  0.0%  0.0%         0     0   .000  200    N    15.1     0

PHASINGS
   EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
   ↰ ↑ ↱ P   ↰ ↑ ↱ P   ↰ ↑ ↱ P   ↰ ↑ ↱ P
                     *  *  *                     38.5   5     A
                 *  *           *                16.7   5     A
           *           *        *           *     0.0  15     A

CYCLE= [illegible] LOST=[illegible] SUM V/S CRIT= 0.55 TOTAL V/C= 0.66

LEVEL OF SERVICE WORKSHEET
[illegible]                                  d1     c       d2   PF   Delay LOS [illegible]

WB T+R   [illegible]                        11.15  791     6.25 0.95  26.78  D  10.6  [illegible]
NB L     [illegible] 0.43  [illegible]      14.01  610     7.36 1.00  21.27  C   9.4  [illegible]
NB T     [illegible] 0.07  [illegible]       8.56  952     0.00 0.62   5.31  B   0.7  [illegible]

DIR Delay LOS
WB  26.78  D
NB  [illegible]
INTERSECTION DELAY = [illegible] INTERSECTION LOS=C
```

```
SASAKI ASSOCIATES INC.    USING CINCH (VER 2.1) BY SASAKI ASSOCIATES, INC.            04-24-1990  10:28:13
PROJECT NAME: COMMONWEALTH CENTER SPEIR  PROJECT NUMBER: 8570.05  BY: SHP

1985 HCM - CHAPTER 9: SIGNALIZED
ESSEX STREET SURFACE ARTERY,LINCOLN STREET
AM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  WITH MITIG  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=ESSUBDAM   GEOMETRICS=ESSUMITG   SIGNAL=ESSUMIT
LOCATED IN [illegible]
VOLUME & GEOMETRICS
             VOLUMES          # OF LANES       LANE WIDTH      CROSS
DIR  LT    TH    RT   TOTAL  LT TH RT         LT   TH   RT     WALK
EB   [illegible] [illegible] 0   514    2  1  0       12.0 12.0  0.0     36
WB  176   795    14    985    0  4  0        0.0 12.0  0.0     32
NB    0   491    16    507    0  2  0        0.0 12.0  0.0     75
SB    0   607   185    792    0  4  0        0.0 12.0  0.0     75

TOTAL VOLUME = [illegible]

TRAFFIC & ROADWAY CONDITIONS
               ADJ PARK                  PEDESTRIANS          ARR
DIR GRADE HV   [illegible] BUSES  PHF  CROSS BUT MIN TIME TYPE
EB  [illegible]                 .900   50    N    16.0     3
WB  [illegible]                 .900   50    Y    16.0     3
NB  [illegible]                 .900   50    Y    25.8     3
SB  [illegible]                 .900   50    N    25.8     3

PHASINGS
     EASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN  Y+R PRE,ACT
                                                        26.9   5    A
                                                        19.9   5    A
                                                        16.2   5    A
                                                         0.0  10    A

[illegible]  CRIT= 0.82 TOTAL V/C= 0.96

LEVEL OF SERVICE WORKSHEET
[illegible]                     d1     c       d2   PF    Delay LOS [illegible]

[illegible]           78     20.99 1001     7.16 1.00   21.07  C  15.[illegible]
[illegible]           27.0   15.45  502     0.00 0.85   13.16  B  [illegible]
[illegible]           [illegible]   25.11 1370     5.55 0.85   26.10  D  [illegible]
[illegible]           18.0   25.41  673    10.32 0.85   30.33  D  11.[illegible]
[illegible]           18     14.64 1705     1.94 0.85   22.60  C  14.8

[illegible]

[illegible] INTERSECTION LOS=D
```

1985 HCM - CHAPTER 9: SIGNALIZED

```
ESSEX STREET/SURFACE ARTERY/LINCOLN STREET
PM PEAK HOUR  1996 BUILD  PROPOSED PROJECT  MITIG  50% REDIST FROM WEST
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=ESSUBDPM   GEOMETRICS=ESSUMITG   SIGNAL=ESSUMIT
LOCATED IN CBD:N
```

VOLUME & GEOMETRICS

```
               VOLUMES          # OF LANES       LANE WIDTH       CROSS
DIR  LT    TH    RT  TOTAL   LT TH RT       LT    TH    RT       WALK
EB 1117 [illegible] 0  1202   2  1  0     12.0 12.0   0.0        36
WB  129   448   13    590    0  4  0      0.0 12.0   0.0        32
NB    0   804   15    819    0  2  0      0.0 12.0   0.0        75
SB    0  1356  161   1517    0  4  0      0.0 12.0   0.0        75

TOTAL VOLUME =  4129
```

TRAFFIC & ROADWAY CONDITIONS

```
                        ADJ PARK               PEDESTRIANS           ARR
DIR GRADE %HV      Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
EB  [illegible] [illegible]    1     0   .900   50   Y    16.0     3
WB  [illegible] [illegible]    1     0   .900   50   Y    16.0     3
NB  [illegible] [illegible] N  [illegible] 0  .900  50  Y  25.8   3
SB  [illegible] [illegible] N  [illegible] [illegible] .900 50 Y 25.8 3
```

PHASINGS

```
   EASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN  Y+R PRE/ACT
   l  t  r  p   l  t  r  p   l  t  r  p   l  t  r  p
1  *  *                                                48.8   5    A
2                *  *  *                               12.9   5    A
3                               *  *         *  *      33.2   5    A
4           *            *            *            *    0.0  10    A

[illegible] =15.0  SUM [illegible] CRIT= 0.77 TOTAL V/C= 0.93
```

LEVEL OF SERVICE WORKSHEET

```
DIR L GRP  [illegible]   C     d1     c      d2   PF    Delay LOS Avg [illegible]

[illegible]                    26.53 1330   14.79 1.00   41.36  E   30.7  [illegible]
[illegible]  [illegible]       17.09  647    0.00 0.85   14.52  E    2.0  [illegible]
WB [illegible]                 40.55  729   26.99 0.85   52.34  E   22.1  [illegible]
[illegible]                    32.67  979   17.75 0.85   40.58  E   25.[illegible] [illegible]
SB [illegible]                 32.47 [illegible] 9.62 0.85 35.77 D  41.[illegible] [illegible]

DIR Delay LOS
EB  [illegible]
WB  52.34  E
NB  40.58  E
SB  35.77  D
INTERSECTION DELAY = 40.82 INTERSECTION LOS=E
```

APPENDIX E

Distribution List

City Agencies:

Stephen Coyle, Director
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

Pam Wessling
Urban Design and Development
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

Richard Mertens
Director of Special Project Planning
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

David Roberts
Director of Special Project Planning
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

David Roberts
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

Kristen J. McCormack, Director
Midtown Cultural District Development
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

David Conlon, Acting Commissioner
Boston Water and Sewer Commission
10 Post Office Square
Boston, MA 02109

Federal Agencies

Ed Reiner
U. S. Environmental Protection Agency
JFK Building
Boston, MA 02203

Federal Aviation Administration
New England Region
12 New England Executive Park
Burlington, MA 01803

Interested Parties

Jerome F. Murphy, Treasurer
M. Steinert & Sons
162 Boylston Street
Boston, MA 02116

Antonia M. Pollack, Executive Director
Boston Preservation Alliance
Old City Hall
45 School Street
Boston, MA 02108

Henry Lee, President
Friends of the Public Garden and Common
90 Mt. Vernon Street
Boston, MA 02108

Connie Brown, Executive Director
Boston Theater District Association
216 Tremont Street
Boston, MA 02116

George Joe, Executive Director
Chinatown/South Cove Neigborhood Council
31 Beach Street, Suite 203
Boston, MA 02111

Bethany B. Kendall, President
Downtown Crossing Association
59 Temple Place, Suite 1014
Boston, MA 02111

James L. Sullivan, President
Greater Boston Chamber of Commerce
600 Atlantic Avenue, 15th Floor
Boston, MA 02210-2200

Mark Primack, Executive Director
The Boston Greenspace Alliance, Inc.
44 Bromfield Street, No. 207
Boston, MA 02108

Chinese Consolidated Benevolent Assocation of New England
90 Tyler Street
Boston, MA 02111

Thomas Hilditch, Property Manager
First Realty Management
151 Tremont Street
Boston,MA 02111

Rafaela M. Rodriquez
Tenant Association
80 Mason Place, #504
Boston, MA 02111

Richard Dimino, Commissioner
Department of Transportation
City of Boston
One City Hall Square
Boston, MA 02201

Lorraine Downey, Director
Enviromental Department
City of Boston
One City Hall Square, Room 805
Boston, MA 02201

Steve Pendery, City Archaeologist
Environmental Department
City of Boston
One City Hall Square, Room 805
Boston, MA 02201

Judity McDonough, Executive Director
Boston Landmarks Commission
Environmental Department
One City Hall Square, 8th Floor
Boston, MA 02201

Brian Glascock, Executive Secretary
Boston Conservation Commission
One City Hall Square, Room 805
Boston, MA 02201

Denise Breiteneicher, Executive Director
Boston Air and Noise Pollution Control Commission
One City Hall Square, Room 805
Boston, MA 02201

Theodore C. Landsmark, Director
Mayor's Office of Jobs and Community Services
43 Hawkins Street
Boston, MA 02114

Bruce P. Rossley, Commissioner
Office of the Arts and Humanities
One City Hall Square, Room 803
Boston, MA 02201

The Honorable James M. Kelly
Boston City Council
Boston City Hall
One City Hall Square,
Boston, MA 02201

Lawrence A. Dwyer, Commissioner
Department of Parks and Recreation
1010 Massachusetts Avenue
Roxbury, MA 02182

Edward Burke
Mayor's office of Neighborhood Services
Boston City Hall, Room 709A
One City Hall Plaza
Boston, MA 02201

State Agencies

John DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Paul Levy, Executive Director
Massachusetts Water Resources Authority
Charlestown Navy Yard
100 First Avenue
Boston, MA 02129

Thomas C. McMahon
Department of Environmental Protection
Division of Water Pollution Control
One Winter Street
Boston, MA 02108

Department of Environmental Protection
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Division of Air Quality Control
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Division of Water Pollution Control
Metropolitan Boston/Northeast Regional Office
5 Commonwealth Avenue
Woburn, MA 01801

Division of Air Quality Control
Metropolitan Boston/Northeast Regional Office
5 Commonwealth Avenue
Woburn, MA 01801

Executive Office of Communities and Development
State Clearinghouse
100 Cambridge Street, 9th Floor
Boston, MA 02202

Frederick P. Salvucci, Secretary
Executive Office of Transportation and Construction
State Transportation Building
10 Park Plaza
Boston, MA 02116

Jane Garvey, Commissioner
Massachusetts Department of Public Works
State Transportation Building
10 Park Plaza
Boston, MA 02116

District 8, Section Chief
Massachusetts Department of Public Works
400 D Street
Boston, MA 02210

William V. Twomey, Director
Central Artery/Third Harbor Tunnel Project
One South Station
Boston, MA 02110

Valerie A. Talmage, Executive Director
Massachusetts Historical Commission
80 Boylston Street, Room 310
Boston, MA 02116

Alden Raine, Director
Governor's Office Economic Development
State House, Room 109
Boston, MA 02133

Armold R. Stymest, Director
Massachusetts Aeronautics Commission
State Transportation Building
10 Park Plaza
Boston, MA 02116

David C. Soule, Executive Director
Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

Thomas Glynn, General Manager
Massachusetts Bay Transportation Authority
10 Park Plaza
Boston, MA 02116

Jane Chmielinski, Environmental Coordinator
Massachusetts Bay Transportation Authority
10 Park Plaza
Boston, MA 02116

Ilyas Bhatti, Commissioner
Metropolitan District Commission
20 Somerset Street
Boston, MA 02108

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